

Vol. XIV

No. 9

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AGRICULTURE

AGRICULTURE, PLANT CULTURE

THE GROWTH OF PLANTS AS IT MAY BE INFLUENCED BY LIGHT AND MANGANESE

(Publication No. 8041)

Walter R. Heald, Ph. D.
Purdue University, 1954

Major Professor: Dr. A. J. Ohlrogge

Light, particularly the intensity of light, seems to have some effect on the toxicity of manganese, at least insofar as the visible symptoms are concerned. If manganese is involved in the photosynthesis mechanism, then undoubtedly light would be a factor to be considered. However, the possibility exists that the effect of light may be much more indirect. It has been long known that there is a diurnal fluctuation in the metabolic activities of plants. Studies with Crassulacean plants have shown that there is considerable fluctuation in the total organic acid content over a 24-hour period, increasing in the dark and decreasing in the light. Further work has also shown that most succulent and many non-succulent plants exhibit diurnal fluctuation of organic acid content. This evidence suggests that growth, which is a summation of the activity of all processes in a plant, may be influenced by the changing organic acid concentrations. It is known that organic acids, as well as many other organic molecules, have the ability to complex metal ions, particularly the heavy metals. Chelation, which results in a type of metal complex, greatly decreases the activity of metal ions, thereby limiting their use in some vital functions such as the activation of some enzyme systems.

If the activities of metal ions have a great influence on the growth of plants, potential measurements on plant material should correlate with the conditions under which the plant was grown. Part I of this thesis deals with an attempt to measure the redox potential in green plants as it is affected by light, iron and manganese. To this end then, oats were grown under

controlled conditions of three light intensities, temperature and nutrient supply. At the end of two weeks the tops of the plants were extruded by means of a plant press. The potentials obtained were of very low magnitude and seemed to be correlated more with the moisture content of the plant material than the treatments. Attempts to show that the manganese or iron systems were being measured potentiometrically were inconclusive. For these reasons it was felt that further investigation was not feasible.

The influence of light on organic acid accumulation and consequently growth could be studied by using such organisms as fungi. The one chosen to work with was *Aspergillus niger*. This organism has a mineral requirement similar to higher plants, as is their metabolism except for the process of photosynthesis. This fungus was particularly well suited for this study in that it accumulated rather large amounts of citric acid.

It was found that this organism grew significantly better in the light than in the dark. Although manganese was removed from the nutrient solution by coprecipitation with CaCO_3 and $\text{Ca}_3(\text{PO}_4)_2$, no significant increase in growth was obtained when manganese was added to the nutrient solution. The concentration of manganese in the nutrient solution did influence the utilization of iron by this organism. Light influenced the accumulation of citric acid by this organism, the organism growing best when the amount of citric acid accumulated was the smallest. Ferrous iron in the nutrient solution was oxidized more rapidly in the presence of manganese and in those cultures which accumulated the greatest amount of citric acid.

It is concluded that the accumulation of organic acids in plants, which is in part controlled by the intensity of light under which the plants are growing, decreases the activity of the metal ion by the formation of chelate structures. A reduction in the activity of metal ions, particularly the minor elements which are present in very small amounts, will decrease the activity of enzymes requiring metal ions for activation. The over-all effect then is a decrease in growth. 69 pages. \$1.00. MicA54-1882

ANATOMY

GROWTH OF THE RAT CALVARIA: THE NATURE OF THE SUTURE AND ITS ROLE AS A SITE OF GROWTH

(Publication No. 8740)

Melvin Lionel Moss, Ph. D.
Columbia University, 1954

The gross, anthropometric and histological development of the calvarial bones and contiguous soft tissue areas of the rat are studied from circumnata stages to 34 days of age. A series of characteristic stages during this developmental process are described.

The influence of the presumptive sutural tissues on the growth and form of the calvaria are investigated by a variety of extirpative techniques, with the following results.

Normal calvarial morphology depends on the activity of the osteogenic tissues on all surfaces. The

shape of the bones is not predetermined by the location of the sutures. It is possible to produce osseous overgrowth with consequent displacement of the sutures by many methods. This phenomenon appears to depend on the period of development of the bones, not of the soft tissues. Sutures mark the plane of articulation between adjacent bones. Their locations are determined by the relative growth of the bones.

The sutures are not the chief sites of growth. The existence of an expansive force within the sutures during the period of greatest growth is not substantiated. Extirpation of the sutures, singly or severally, is not followed by any decrease in either width or length of the calvaria.

Conflicting theories of calvarial growth are harmonized when allowance is made for the period of development of the site of growth of the particular form under investigation.

53 pages. \$1.00. MicA54-1883

ANTHROPOLOGY

THE HELEN BLAZES SITE OF CENTRAL-EASTERN FLORIDA: A STUDY IN METHOD UTILIZING THE DISCIPLINES OF ARCHEOLOGY, GEOLOGY, AND PEDOLOGY

(Publication No. 8654)

William Ellis Edwards, Ph. D.
Columbia University, 1954

The Helen Blazes site (Br 27), excavated by the writer in 1949, 1950, and 1951, is near Melbourne, Florida, and contains stratified deposits of Paleo-Indian, Orange, and Malabar occupations in soil profiles between erosional disconformities.

Upward from a stratum of sandy red clay, the deposits are as follows: Stratum I, blue clay (approximately 54 in. thick); II, shell, sand, and clay (42 in.); III, very sandy, blue-gray, columnar clay (20 in.); IV, white sand (1/2 in.); V, brown sand (2 in.); VI, very light brown sand (13 in.); VII, mottled gray-brown sand (7 in.); VIII, white sand and humus (6 in.) Strata V and VI contain Paleo-Indian artifacts; VII produced a fair number of fiber-tempered potsherds; and VIII contains Malabar cultural material.

Apparently after Yarmouth (second interglacial) deposition and Illinoian (third glacial) weathering of

the red clay, Strata I to IV were deposited during the Sangamon (last interglacial) inundation, while III and IV represent B and A₂ horizons of a Wisconsin (last glacial) solodized-solonetz soil profile. Sand deposited during a Post-glacial high sea-level (perhaps +15 feet) was weathered during a lower Orange period sea-level (disconformity obscured in VII) to B₁ (V) and A₂ (VI) horizons of a profile intermediate between yellow and gray-brown podzolics. Rising sea-levels during the past 2000 years permitted further deposition and the formation of a mottled glei horizon (VII) and a leached surface zone (VIII).

Strata V and VI produced 7 lanceolate points with varied shapes, good workmanship, basal concavity, smoothed basal edges, some laterally projecting "ears", and some fairly large basal thinning spalls. Also represented in the Paleo-Indian artifact assemblage were a unique stemmed point, snub-nosed end-scrapers, retouched edge snub-nosed scrapers, small round scrapers, snub-nosed side-scrapers, irregular side-scrapers, flake scrapers, graters, retouched flakes, utilized flakes, and sand-stone abraders. Some refuse, possibly Paleo-Indian, was recovered under Midden 4 of Br 23, adjoining Br 27. A skull, conceivably Paleo-Indian, was also recovered from VI under Midden 1.

All artifacts and 121 chert flakes were analyzed stratigraphically. Although no changes in implement types or material could be demonstrated, apparent trends in projectile points to diminished basal concavity and incipient side-notches were noted.

The Helen Blazes lithic complex manifests very few similarities to Archaic cultures and even fewer to Woodland and Mississippian manifestations, although there were scattered survivals of snub-nosed scrapers, gravers, lanceolate points, and basal smoothing. Varying degrees of relationship were also apparent upon comparison of the Helen Blazes assemblage with those from Williamson, Shoop, Reagen, Parrish, Faulkner, Starved Rock, Sandia, Folsom, Lindenmeier, Clovis, McHaffie, Concho, Denbigh, Plainview, Browns Valley, Lake Mohave, Borax Lake, Scottsbluff, Frontier, Signal Butte, Nebo Hill, and sites (manifesting several Paleo-Indian cultures, cultural stratigraphy, geological antiquity, and contemporaneity with extinct mammals) excavated by the writer in north-central Florida. The closest resemblances are not with the apparently earliest complexes (Clovis, Folsom, Enterline, etc.) but with those characterized by unfluted lanceolate points (Plainview, Browns Valley, etc.). However, the lack of varied stemmed and notched points and of ground stone implements indicates that the Helen Blazes culture preceded very late Paleo-Indian and Archaic manifestations and may be typologically dated ca. 5500 to 4000 B. C.

In an appendix it is demonstrated that V-VII at Helen Blazes can be equated with Layer 2 (the Melbourne formation or bone bed) near Melbourne and Vero, thus correlating the Paleo-Indian occupation with some thirty species of extinct mammals and the Melbourne Interval of high sea-level. Many types of evidence indicate that the Melbourne Interval sea-level may have been 15 or at least 6 feet higher than at present, was of relatively brief duration, and occurred between 5500 and 4000 B. C.

151 pages. \$1.89. MicA54-1884

THE ACCULTURATION OF THE ARAUCANIAN PICUNCHE DURING THE FIRST CENTURY OF SPANISH COLONIZATION IN CHILE: 1536-1635

(Publication No. 8656)

Louis C. Faron, Ph. D.
Columbia University, 1954

This paper is a study of Spanish-Picunche acculturation during the first century of colonization in Chile. The interaction of Araucanian and Spanish patterns is described and analyzed in an attempt to account for the development of the basic configurations of colonial Chilean culture. The position is taken that because of special cultural and natural conditions which existed in Chile, the mainstays of Spanish colonialism - encomienda, draft labor, and tribute - developed a peculiarly Chilean character. In the evolution of these institutions is seen the

cultural transformation of the Araucanian aborigine into a rural and/or an urban proletariat.

These developments are discussed in the framework of three major periods of acculturation: Conquest, Transition, and Colonial. It is shown that Indian and Spanish cultures underwent a series of modifications, and adaptations to each other, which resulted in the growth of a colonial culture embodying both Spanish and Indian elements but manifesting its own distinctive patterns.

In northern middle Chile the Spaniards dominated the colonial scene and, under the system of encomienda, organized the Picunche into a manageable labor force. As the Indians were subjected to numerous economic and social pressures, aboriginal culture tended to disappear rapidly and in direct proportion to the extension of Spanish cultural influences. The kinds of changes that both Picunche and Spanish culture underwent can be related to the various economic and social arrangements that developed, first, in a mining-oriented economy and, later, in an agricultural and stock-raising economy. The Spanish institutions of encomienda and hacienda are used as foci in the description and analysis of the acculturational situation that existed in colonial Chile.

Several factors, among which were colonial Chile's geographical and mercantile isolation from the rest of the Spanish Empire, the small size of the encomiendas and the rapid diminution of the Picunche population, continual warfare with the Araucanians in southern Chile, and the depletion of the gold deposits, contributed to the development of close day-to-day relationship between the Spaniards and their encomienda Indians. In turn, this gave rise to the rapid breakdown of aboriginal culture in northern Middle Chile, the absorption of the Picunche into the dominant Spanish cultural patterns, and the growth of a large mestizo population due to easy and widespread miscegenation.

Around the turn of the sixteenth century the system of hacienda took precedence over encomienda and threw the colonists and the Picunche into even closer relations under different economic arrangements and social juxtaposition. The spread of haciendas intensified the breakdown of native culture by the diffusion of Spanish patterns and by the uprooting of the last of the Picunche settlements. With the infusion of mestizos, in large numbers, into the labor complement, the social and economic framework of the colony reorganized along lines which characterized Chile throughout the rest of the colonial era.

213 pages. \$2.66. MicA54-1885

**PATTERNS OF SOCIAL ORGANIZATION
IN NEW YORK CITY'S CHINATOWN**

(Publication No. 8686)

Virginia Heyer, Ph. D.
Columbia University, 1953

The problem of the thesis is to define and describe some principles of social organization of Chinatown, New York.

Interviews were conducted with ten principle informants over a period of eight months. Records of mediation cases from the Chinese Benevolent Association were the other principle source of the study.

A high degree of continuity between the homeland and the overseas colony is seen in the pattern of emigration, both as it has grown up historically from a pattern of overseas trading expeditions, and in the life arrangements of the emigrants whose parents, wives and children remain in China, and who return to their families in China in their old age. Emigration for the Chinese is temporary. It is ordinarily undertaken only by males, and only for the purpose of supporting the family in China. Emigration is a tradition of certain restricted areas of South China, of certain villages and certain clans. The clan members usually go generation after generation to the same overseas colony, a practice which promotes the continuity in relations between the emigrant and his home.

The Chinese in America are China-oriented and tend to be unassimilating. The American racial antagonism toward them has reinforced the Chinese immigrants' own tendency to separate themselves from American society, and to maintain their own tightly organized and protective communities. The "Chinatown people" in New York are mainly Cantonese in origin, and the term does not include the "uptown" Chinese, most of whom are from North and Central China, and are students and professionals. There is a 6:1 ratio of males to females among the Chinese in New York, and the population is largely foreign born.

The social organization of Chinatown consists on the lowest level of small village and clan organizations which are like extended family groups, and, on a level above, large associations of people from the same territory and people having the same family name. These territorial and family name associations provide an ascribed status for every individual in Chinatown. They are protective societies, and each one is autonomous and has final authority over its members in community affairs. Other protective associations are organized on an occupational basis or are secret societies operating somewhat clandestinely. They are similar in structure and function to the territorial and family name associations.

The Chinese Benevolent Association is a mediating body to which the protective associations take disputes. It does not have structural power over the protective organizations, but is the place where the sovereign powers negotiate and agree to methods of enforcing customary regulations, or work out compromises between disputants.

Chinese business practices show the same patterns of social relations and principles of organization as the protective associations. Economic regulations safeguard Chinese business from direct competition, thus preserving distance and autonomy for each store. The pattern is designed for the protection of small business, but when big business is established it claims the same right of freedom from competition, that is, a monopoly of markets. It is almost uncontrollable by the community because it utilizes the accepted principles of business practice.

In the mediation of all disputes the respect for face, the weight of personal prestige and the protection of human feelings are of primary importance. The system is non-punitive; it aims at achieving a satisfactory settlement for both sides rather than deciding right and wrong. While the associations are the powers of the community, many people are not interested in the gains to be achieved through them and have little need for the protection they offer. The associations have power over people who are involved in them and are an instrument of power for those who want to use them; but they have little power over the people who dissociate themselves from them.

Throughout Chinatown culture runs the pattern of congruous, autonomous and isolated units. This is considered one part of a polarity in Chinese culture, the other aspect of which is complementariness and an ethic of interpersonal obligation.

196 pages. \$2.45. MicA54-1886

**SOCIAL AND ECONOMIC ORGANIZATION
IN A GUIANA VILLAGE**

(Publication No. 8788)

Harold Hickerson, Ph. D.
Indiana University, 1954

The author treats the social and economic organization of a community of Negro villagers in Essequibo Coast, British Guiana. The attitudes of the villagers toward their social and economic existence provide a frame of reference in which values and behavior are compared. The study is based on a seven month field study, 1951-52, under the auspices of the Wenner-Gren Foundation and the Department of Anthropology, Indiana University.

The village described is located in a coastal district in western British Guiana. The district is basically a rice growing area, with coconut cultivation and cattle husbandry as subsidiary industries. The leading rice cultivators are East Indians who live as tenant-farmers in private estates, and grow this crop for both cash and subsistence. Negroes - a minority group - live as small proprietors in semi-autonomous villages, and specialize in artisan work and small-scale trade, and farm only for subsistence. East Indians and Negroes together account for over ninety percent of the district's population; the former outnumber the latter in the ratio of two to one.

The village lies in the heart of an area that until a generation ago had as its leading industry sugar cane cultivation. Village Negroes were then extensively employed as field, factory, and boat hands, and used their properties and other rented lands for subsidiary pursuits. Under East Indian stimulus cane cultivation was supplanted by rice farming, and the village Negroes, without access to extensive rice fields, were forced to seek other work.

Peoples of working age have left the village and district in large numbers to work in the sugar industry, which still flourishes elsewhere in the colony, or in distant urban centers. Many of those who leave remain closely affiliated to families that stay on their properties in the village. Absentee workers and their wives or parents in the village pool their resources in this inhospitable economic setting.

Household organization, interactions among extended kinsmen, marriage forms, and such formal and informal non-kinship groupings as burial societies, work groups, and friendship cliques are treated at length. Such features as the rearing of children by their grandmothers, and the relaxation of ties with family members outside the household are seen in the perspective of the extensive work-absenteeism of men and women in the parental generation, and the harsh economic conditions under which each individual household is occupied with piecing out its own livelihood.

Individualization of economic endeavor and the atomization of social units occur side-by-side with a values system in which inter-household cooperation and the maintenance of strong extended family ties are prominent desiderata. The villagers feel that under their present conditions the family, the community life, is disintegrating, and their traditional status as "independent" freeholders is threatened by excessive poverty. They criticize themselves for abandoning traditional cooperative values, and blame segments of the outside world - mainly the large land-owners and the government - for discouraging the development of new industries that would keep their young people at home.

463 pages. \$5.79. MicA54-1887

VILA RECONCAVO: A BRAZILIAN
SUGAR-CANE PLANTATION COMMUNITY

(Publication No. 8691)

Harry William Hutchinson, Ph. D.
Columbia University, 1954

This is a community study carried out on the sugar plantation coast of northeastern Brazil. Vila Reconcavo has a long, opulent past, based on the production of sugar. The Colonial system of sugar production, known as the *engenho*, was characterized by large land holding, large patriarchal families and slave labor. It was a self sufficient unit, consisting of a nucleus with a Big House, chapel, mill and worksheds. Sugar-cane was grown on the lands of the

engenho and processed in the unmechanized mill.

The *senhores de engenho* were landed aristocrats, directing local municipal affairs and prominent in state and national politics and social life.

In the late 19th century the sugar industry underwent a basic change. Slavery was abolished, political changes challenged the position of the aristocracy, and the church and state were separated. The sugar industry was faced with a change in the basis of labor supply from slavery to wage laborers, and at the same time with a demand for a better product.

One result was the industrialization of the former family way of life. In Cuba and Puerto Rico industrialization was carried to a great degree. Foreign capital was introduced, land consolidation reached extreme proportions, milling became highly mechanized, and the landed gentry was displaced. Owner-worker relations were put on an impersonal cash basis, and gradually labor unions and governmental action became mediating factors between the two. New machinery was introduced into the field as well.

Vila Reconcavo represents a phase which falls between these two extremes of sugar production, the *engenho* and the *usina* (industrial factory). Although the *usina* system was introduced in this community, its form was patterned on the past organization of the *engenho*. Instead of foreign capital, the owners of Usina Sao Pedro are all members of two extended families, and whose members take active direction of the corporation, in the factory and in the field. Relations between the owners and the workers are still personal, face-to-face, and many of the old patterns of paternalism of the former period have been retained, supplementing cash wages.

In addition to the *usina* system, the private plantation is an important part of Vila Reconcavo, carrying on much as it did in the times of the *engenho*, except that its cane is now sent to the *usina* for milling. Paternalism and personal relations between owner and laborer are found at their highest degree here. Work in the field is manual, and the hierarchical organization of the plantations is much the same as it was before industrialization.

This transitional stage between the *engenho* and *usina* is also reflected in the class and racial attitudes of the population. As yet there is only a small, slowly growing middle class. Racial attitudes, which have had a unique development in Bahia, Brazil, remain secondary to class considerations, and racial antagonism is almost unknown. Family structure is also little changed from the *engenho* period. The basic units are the large extended patriarchal family for the land owning group, and the smaller biological family for the lower classes. Religion has experienced a marked decadence in the community since the division occurred between the church and state.

The community structure has changed, the former county and county seat orientation being broken up with the advent of the factory towns. Nevertheless, the county seat still retains its official bureaucratic functions, and is officially, although not from the point of view of a center of attraction, the community center.

In spite of social, economic, political and technological changes of the past century, Vila Reconcavo has shown an amazing retention of patterns, especially in regard to class, race and family life and human relations.

415 pages. \$5.19. MicA54-1888

THE NEOLITHIC AGE IN EASTERN SIBERIA

(Publication No. 8568)

Henry N. Michael, Ph. D.
University of Pennsylvania, 1954

Supervisors: Dr. Froelich Rainey and
Dr. J. Louis Giddings

This work surveys and evaluates the archaeological literature dealing with all the subdivisions of Eastern Siberia which have been investigated and reported on up to 1952. Four major subdivisions of Eastern Siberia are considered: 1) The Baikal region; 2) the Middle Lena region; 3) the Lower Lena region; 4) the Arctic coast of Eastern Siberia. In regard to the Baikal region, the past investigations and conclusions are reviewed and the latest (1950) revisions and refinements in the periodization and chronology are given. The latter are seen to involve the following: 1. An autochthonous Upper Paleolithic period ending in the sixth millennium B. C. 2. A transitional "Mesolithic" period, the Khina, loosely datable to the fifth millennium B. C. 3. A true Neolithic period, the Isakovo, datable to the fourth millennium B. C. In this period pottery and the bow and arrow are demonstrably present for the first time in the Baikal region. 4. The Serovo period, a fully developed Neolithic manifestation chronologically occupying most of the third millennium B. C. 5. The Kitoi period, the last of the truly Neolithic periods, dated to the second half of the third and the beginning of the second millennia B. C. 6. An Eneolithic period, the Glazkovo, with traces of copper usage in its material culture. It spans the period from 1700 B. C. to 1300 B. C. 7. A terminal Eneolithic culture, the Shivera, during which copper replaces at least some of the stone artifacts. The dating is 1300-900 B. C. A fully developed Bronze Age is seen in the material remains of the Baikal region only after 900 B. C. Iron is first encountered in the third century B. C.

The archaeological picture for the other subdivisions of Eastern Siberia is not as detailed as that given for the Baikal region. The earliest datable sites in the Middle and Lower Lena valleys, as well as on the Arctic coast of Eastern Siberia, belong to late Neolithic (Kitoi) and Eneolithic (Glazkovo, Shivera) periods. The one exception is the stratified Kullata site in the Middle Lena region, which has Serovo affinities.

Despite local variations in their material contents and locally developed manufacturing techniques, all of the Eastern Siberian Neolithic and Eneolithic cultures contain burins, both of the core and the flake

variety, side-bladed composite points and knives, and characteristically ornamented pottery. The economic emphasis also seems to shift at approximately the same time, i.e. up to and including the Serovo period, hunting seems to be the predominant factor in economic pursuits, afterwards - during the Kitoi and Glazkovo periods - the economic emphasis shifts in favor of fishing.

Two types of intercontinental ties are suggested - in a preliminary way - in this work: 1. Connectives between the Neolithic-Eneolithic cultures of Eastern Siberia and the Palaeo-Eskimo cultures of the western part of northern North America. 2. Connectives between the early Mesolithic-Neolithic cultures of the Lake Baikal region with those few sites stretching thinly over the enormous territory of northern North America which are at the present "floating in time", but which reveal some elements suggesting northern Asiatic origins. In northern North America such cultures are represented, at least in part, by the Denbigh Flint Complex, the Trial Creek cave site on Seward Peninsula, the Pointed Mountain site near Fort Liard in Canada, the Sarqaq culture in Greenland, et al.

401 pages. \$5.01. MicA54-1889

YUROK RITUAL

(Publication No. 8759)

Sollie Henry Posinsky, Ph. D.
Columbia University, 1954

An examination of the several theories of ritual and of the total ritual system of the Yurok indicates that Chapple and Coon's theory of ritual clarifies most of the Yurok data. Chapple and Coon see ritual as a configuration of techniques and symbols which, by requiring the interactions of the disturbed individuals in specific and habitual ways, restores the equilibrium of individuals (rites of passage) and of groups (rites of intensification) after a crisis.

Yurok ritual is especially significant as a mechanism which makes for social control and stability because the society, frequently described as "amorphous" and "anarchic," is lacking in any important super-familial institutions. The absence of rites of passage outside the family is in accord with the basically familial nature of Yurok society. The great rites of intensification, geared to the seasonal salmon-runs, heighten the necessary interactions and achieve inter-community and almost inter-tribal cohesiveness. In each case the complexity of a rite is a function of the disequilibrium which it seeks to allay. The complexity of a rite is thus related to the magnitude of the changes, the number of individuals and institutions involved, and the degree to which they are affected.

A rudimentary differentiation exists among the various semi-specialists in Yurok ritual. Shamans, who are generally women, specialize in the ritual treatment of individual ailments. Formulists, who

are of both sexes and who possess highly particularistic powers, officiate at all other rites of passage within the family and at the great rites of intensification which serve the group as a whole.

Chapple and Coon derive ritual techniques and symbols from the underlying workaday techniques and contexts of interaction. This hypothesis has been verified by our analysis of Yurok ritual, as has the tendency of ritual to reinforce the underlying workaday techniques and interactions. We are thus

justified in considering ritual, but not religion, as a universal and necessary aspect of culture. The correlation of levels of technological, institutional, and symbolic complexity eliminates many *ad hoc* hypotheses and points the way to further comparative study. However, since the concept of equilibrium proves to be somewhat too narrow, it is necessary to supplement it with an awareness of the conditioning and time-binding function of ritual.

311 pages. \$3.89. MicA54-1890

BACTERIOLOGY

THE INHIBITION OF KREBS 2 CARCINOMA
BY MENINGOPNEUMONITIS VIRUS

(Publication No. 8536)

Alan Bernstein, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. W. Henle

The virus of meningopneumonitis (MP) was found to cause the prevention or suppression of Krebs 2 carcinoma in the form of either ascites or solid subcutaneous tumor in mice. Complete inhibition of the ascites tumor was achieved when the virus, in concentration of $6 \times 10^{6.5}$ LD₅₀'s per inoculum, and tumor cells, in concentration of 10^6 per inoculum, were injected intraperitoneally. The potency of the virus was measured by intracerebral inoculation of mice. Two criteria were employed in determining ascites tumor growth and viral activity. They were the presence of ascites containing tumor cells and abnormal increase in the body weight of the mouse. These criteria, however, were somewhat difficult to quantitate in terms of the degree of inhibition of the tumor and therefore, were limited to qualitative determinations. Solid tumors, on the other hand, were able to be measured with more precision by either size or weight determinations of the excised tissues. For this reason, it was decided to employ solid tumors for studies on the tumor cell-virus interaction.

The inhibition of the solid tumor was found to be dependent upon the concentration of the tumor cells and virus. For a given concentration of tumor cells, a gradient response in the percent inhibition was observed with decreasing amounts of virus.

The interaction between tumor cells and virus was also dependent on time relationships. Complete suppression of tumors was possible only if virus was given immediately after administration of cells. A delay of one hour caused the appearance of tumors in almost 50 percent of the animals.

That the effect of virus was associated with virus multiplication was demonstrated by two types of experiments. (1) It was shown that the virus failed to suppress tumors in mice immune to the virus. (2)

Aureomycin was found to interfere with successful suppression of tumors by virus.

Solid tumors showed an apparent "attraction" for virus. When virus was inoculated into a muscle on the side opposite the tumor only the muscle at the site of inoculation and the tumor contained relatively significant amount of virus. There was considerably less virus in the muscle adjacent to the tumor.

The failure to demonstrate the multiplication of MP virus in the tumor cells or the adsorption of the virus to the cells suggested that the action of the virus on the tumor cells might be of an indirect nature. However, preliminary data has shown that the tumor cells appear to inhibit the multiplication of MP virus when the two reactants were inoculated simultaneously into the same organ. This observation suggests that the phenomenon of tumor inhibition may represent a form of competition between MP virus and Krebs 2 carcinoma cells.

50 pages. \$1.00. MicA54-1891

CYTOLOGICAL ASPECTS OF
SALMONELLA TYPHOSA AND
CORYNEBACTERIUM DIPHTHERIAE

(Publication No. 8543)

John Clifton Davis, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Stuart Mudd

Part 1.

Three strains of *Salmonella typhosa* were studied and compared for their mitochondria with the aid of vital mitochondrial stains, and nonvital lipid, nuclear, flagellar and cell wall stains. No strain differences in mitochondria were observed. As a result of their redox activity, the mitochondria were stained with triphenyltetrazolium chloride, neotetrazolium chloride, blue tetrazolium chloride, Janus green B, and the Nadi reagent. Mitochondria contained bound lipid which was unmasked and rendered stainable by

citric acid employed in a modified Sudan black B staining procedure. Some mitochondria were observed to be surfaced by phospholipid material shown using Baker's procedure. Mitochondria and nuclei were separate structures as shown by combination staining, and were distinct from cell walls and septa. The terminal spheres attached to the bases of flagella of motile cells were colored with Leifson's flagellar stain but not with mitochondrial stains. Nuclei were shown using the Feulgen stain and DeLamater's nuclear stain. The existence of a gradient of mitochondrial reactivities was suggested by the fact that mitochondria visible in cells stained with triphenyltetrazolium chloride averaged 1, 2 or several per cell and were ordinarily located at the poles, while mitochondria stained with neotetrazolium or blue tetrazolium chloride were frequently more numerous per cell and were often peripheral as well as polar in distribution. However, some cells showed the same staining pattern using either of these salts, and compositely stained granules could be obtained. At any rate, neotetrazolium and blue tetrazolium chloride were more reliable than triphenyltetrazolium chloride as indicators of all the enzymatically active mitochondria within each cell.

Part 2.

As a result of studying the rod and coccoid variations of a mitis strain of *Corynebacterium diphtheriae* with the aid of vital and nonvital stains and the electron microscope, the following findings were made. Cell walls were prominent while septa were infrequent and often indefinite. Mitochondria were particulate, showed redox activity (using triphenyl-, neo-, and blue tetrazolium chloride and Janus green B), failed to respond to the Nadi reagent, contained sudanophilic lipid, were distinct from nuclei, cell walls and septa, were nonbasophilic, and were indifferent to the Harman stain for mitochondria. Metachromatic granules contained lipid, showed an indifferent association with stainable polysaccharide (as detected by the method of Hotchkiss), lacked protein (shown using a mercuric bromphenol blue stain), may have possessed redox activity (unless it resided in adjacent structures), could be distinguished from numerous nonmetachromatic mitochondria, were distinct from nuclei, cell walls and septa, were removable with ribonuclease but not with desoxyribonuclease, could be produced under anaerobic conditions as well as under aerobic conditions, and required phosphate in the medium for their production. Cells lacked stainable phospholipid, at times stained strongly for polysaccharide, and had deposits of ribonucleic acid (stainable with methylene blue but not after ribonuclease treatment), gram positive material, protein and electron-scattering material which could be localized (e. g. in cells grown in blood broth) or generalized (e. g. in cells transferred from blood broth culture onto nutrient agar) depending on environmental conditions. Cocci were electron opaque.

107 pages. \$1.34. MicA54-1892

FACTORS INFLUENCING THE ULTRAVIOLET SENSITIVITY AND PHOTOREACTIVABILITY OF T₁ BACTERIOPHAGE

(Publication No. 8687)

Ruth Frances Hill, Ph. D.
Columbia University, 1954

UV inactivation and photoreactivation curves for bacteriophage T₁ have been obtained for the following conditions of irradiation - dry, suspended in ammonium acetate solution, frozen in phosphate buffer and in ammonium acetate, suspended in varying concentrations of ethanol, and adsorbed to the bacterial host cell. Each of these conditions results in characteristic differences in the survival curves, provided only that the conditions exist at the time of irradiation.

Irradiation of the phage after air drying results in an unchanged dark survival curve, compared with irradiation in buffer but there is no photoreactivation, in a majority of experiments. With the use of P³²-labelled T₁, it was shown that this loss of photoreactivability is not due to an impaired adsorbability. In a few experiments with air-dried T₁, a photoreactivation curve was obtained. These anomalous curves probably depend upon the presence of critical amounts of water. Such curves, however, show a final reactivation slope which is equal to the final dark slope. This feature cannot be explained by present theories as to the nature of photoreactivation.

Indirect products formed in the medium by UV cannot explain any of the survival curves. Interpretations of the curves by means of a photoreactivable sector, by means of a dose-reduction principle or by means of a 2-population hypothesis, are also unsatisfactory.

A method has been devised for interpreting the survival curves on a hypothesis of UV-induced changes of state of the phage, superimposed upon initial physical and chemical variations of state already present. This method leads to a model, which fits the data for 4 of the irradiation conditions. The calculated values of the probabilities of transition between various states, show interesting relationships. Possible fundamental reasons for such relationships are inferred.

76 pages. \$1.00. MicA54-1893

STUDIES ON SPORE GERMINATION IN BACILLUS MEGATERIUM

(Publication No. 8561)

Hillel S. Levinson, Ph. D.
University of Pennsylvania, 1954

Supervisor: M. G. Sevag

The early (2-4 hours) germination of *Bacillus megaterium* spores in a glucose substrate was measured by oxygen consumption (standard Warburg

technics) and by a staining technic. The enhancement of germination by preheating of spores (at 60° C. for 10 minutes) was confirmed. Manganese ion, in a concentration as low as 1.8×10^{-5} M, not only eliminated the need for heat activation, but actually resulted in more germination and oxygen consumption (in inorganic salts-glucose) than was observed after heat-treatment. Cobalt and zinc ions also stimulated germination and respiration, but to a lesser degree. The increased oxygen consumption cannot be ascribed to complete germination into vegetative cells, but to spores which are in a so-called pregerminative phase. When L-alanine (and no glucose) was used as the substrate, manganese stimulated germination, but there was no concomitant oxygen consumption. High phosphate concentration repressed germination, but this effect could be balanced or eliminated by chloride, or by other monovalent anions, or by adenosine.

Extracts of *Bacillus megaterium* spores ground with powdered pyrex glass have been shown to be capable of hydrolyzing proteins such as gelatin and egg albumin. The hydrolysis has been demonstrated by changes in the viscosity of gelatin; by paper partition chromatography of the hydrolytic products; and by increase in the ninhydrin color. Manganous sulfate, in a concentration of 10 ppm of manganese enhances the proteolytic activity.

The ground spore material itself serves as a substrate for this proteolytic activity. This homologous substrate is much more rapidly hydrolyzed than are the heterologous gelatin and egg albumin substrates. The hydrolysis of the homologous substrate is also stimulated by manganese.

It is hypothesized that spores do not necessarily require an externally supplied stimulus for germination. That is, germination of the spores of *B. megaterium* is not dependent on an "excitant" in the medium. We present a theory that the previously observed stimulation of germination by manganese is correlated with demonstrated proteolytic capacity of the spores. According to this theory, the proteolytic activity of the spores (manganese as an activator) results in the production of amino acids, the presence of which stimulates the spores to germination. This stimulation of germination may be obtained by supplying the spores with the correct amino acids. Thus, L-alanine will stimulate germination.

This theory does not account for all the complexities of spore germination, but may cover the initial steps. A source of energy such as glucose seems to be needed for the completion of the process.

The demonstration in spore extracts of transaminase, as well as proteolytic enzymes casts some doubt on the universal validity of the conclusions reached by Hardwick and Foster (1953) to the effect that vegetative cell enzymes are sacrificed in sporogenesis leaving the spores devoid of, or almost devoid of enzymes.

56 pages. \$1.00. MicA54-1894

STUDIES ON THE PRODUCTION OF INCOMPLETE INFLUENZA VIRUS

(Publication No. 8570)

Kurt Paucker, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Werner Henle

Exposure of standard seeds of influenza virus to 37°C *in vitro* for varying periods of time decreased the infectivity (ID_{50}) titers of the preparations at a rate of approximately 1.1 \log_{10} units per day, whereas the hemagglutinins (HA) remained unaffected as a rule. The inactivation curve appeared to correspond to a first order reaction.

Allantoic inoculation of undiluted and tenfold diluted virus preparations which had been previously heated for up to 5 days, resulted largely in the liberation of hemagglutinins devoid of the infectious property. Correspondingly, the progenies revealed considerably lower ID_{50}/HA ratios than those obtained with standard seeds. On 100 to 1,000-fold dilution of the inoculum, the yields contained increasingly larger amounts of infectious virus and exhibited ID_{50}/HA ratios approaching those of standard virus. Heated standard virus behaved, therefore, like seeds derived from undiluted passages (von Magnus).

Growth curve experiments in intact chick embryos inoculated with heated standard virus revealed that as soon as liberation of progeny above the level of residual, non-adsorbed seed became detectable the material released exhibited already low ID_{50}/HA ratios. These results were corroborated by differential growth curves in deembryonated eggs, i.e., under conditions where the non-adsorbed seed virus was removed and inactivation of infectious virus subsequent to its release was largely prevented. Furthermore, the experiments showed that once the level of maximal liberation has been attained, roughly equal amounts of the same type of virus material were released from the cells during successive 2-hour intervals for periods up to 30 hours or more.

On exposure of standard virus to 37°C for periods in excess of 6 days the capacity to induce formation of incomplete virus was gradually lost, even when infectivity levels were restored to such preparations by admixture of infectious virus in varying proportions. On the contrary, these seeds exhibited interfering properties to an increasingly greater extent. This change in viral behavior denotes a progressive degradation in the course of prolonged exposure to 37°C.

Standard seed exposed to 37°C *in vitro* revealed no significant differences from untreated virus with respect to enzymic activity and sedimentability.

Prolonged incubation of infected embryos likewise yielded seeds which on passage produced progenies consisting predominantly of non-infectious hemagglutinins. Since the ID_{50}/HA ratio of the yield was the lower the longer the *in ovo* incubation of the seed, it was considered that inactivated complete virus was a contributing factor in the von

Magnus phenomenon. However, comparison of differential growth curves in deembryonated eggs obtained with various heated standard seeds and undiluted passage preparations of comparable infectivity and hemagglutinin titers revealed that the latter were considerably more efficient producers of incomplete virus. This indicates that the non-infectious hemagglutinins in undiluted passage seeds are to some extent different from heat-inactivated complete virus. The production and liberation of non-infectious forms of virus, therefore, appears to be a reality.

Further experiments indicated that the incomplete virus represents an intermediary stage in standard virus reproduction. It was seen in differential growth curves in deembryonated eggs that 10 times the amount of infectious virus was liberated in a given 2-hour interval than was present in the membranes at the onset of that period. On the other hand, only about 1/4 of the hemagglutinins was released during the same time. This implies that non-infectious hemagglutinin is produced first and in excess before conversion into infectious virus shortly before or during liberation. Essentially similar results were obtained after injection of undiluted passage or heated standard seeds except that the ID₅₀/HA ratios both in membranes and media were considerably lower. It appears, therefore, that maturation to infectious virus is not a prerequisite for release but that immature forms also can be shed under certain conditions.

69 pages. \$1.00. MicA54-1895

THE EFFECT OF IONIZING RADIATIONS UPON THE HOST CELL-VIRUS RELATIONSHIP AS STUDIED IN TISSUE CULTURE

(Publication No. 8910)

Nathan Joseph Schneider, Ph. D.
University of Pittsburgh, 1954

This study deals with the effects of X and beta rays on the tissue cells of certain warm-blooded vertebrates as demonstrated by changes in the ability of these cells to support the growth of selected animal viruses in roller tube tissue cultures. Two host cell-virus systems were employed: (1) chick embryonic tissue and vaccinia virus, and (2) mouse embryonic or adult tissue and poliomyelitis Type 2 virus (MEF1 strain). Tissues were irradiated *in vivo* or *in vitro* and inoculated with appropriate dilutions of virus. At intervals thereafter the tissue culture fluids and/or the tissue cells themselves were harvested and titrated for viral content. Unirradiated control tissues were treated in similar fashion and served as a basis for determining the presence or absence of radiation effects. The techniques of radiation and of viral titration were standardized as much as possible. The following experiments were carried out.

(A) Determination of the growth pattern of

vaccinia virus in normal chick embryonic tissue and in similar tissues previously exposed to varying amounts (500 r. - 1,500 r.) of X-radiation *in vitro*. Similar studies were carried out in tissues irradiated (250 r.) *in ovo*.

(B) Determination of the effect of the serial passage of vaccinia virus in chick embryonic tissues irradiated *in ovo* or *in vitro* upon the ability of the viral agent to multiply in these tissues.

(C) Determination of the effects of varying the following factors in connection with radiation of tissue *in ovo*: age of embryo, amount of radiation exposure and dosage rate, and interval between radiation and planting of tissues in roller tubes.

(D) Attempted propagation of the MEF1 strain of Type 2 poliomyelitis virus in mouse embryonic tissue cultures derived from tissue irradiated *in utero* or *in vitro* with P³².

(E) Attempted propagation of the MEF1 strain of virus in mouse embryonic and adult tissue cultures derived from tissues exposed to X-radiation *in utero* and in the intact animal, respectively.

The results may be summarized as follows:

As regards the chick embryonic tissue-vaccinia virus system, the slight effects noted following *in vitro* radiation in doses up to 1,500 r. were not significant. In contrast, the administration of 250 r. *in ovo* was followed by a significant decrease in the ability of the tissues to support the growth of the virus. The age of the embryo and the interval between the times of radiation exposure and planting of tissues in roller tubes affected the results; under the conditions of the experiment the dosage rate and the amount of exposure played no significant role.

As regards the mouse tissue-poliomyelitis virus system, all attempts to propagate the MEF1 strain in mouse embryo or adult tissue cultures derived from normal or irradiated animals failed.

The general conclusions drawn are: (1) exposure of chick embryo tissue to X-radiation *in ovo* decreases the ability of these tissues to support the subsequent growth of vaccinia virus; (2) exposure to X-radiation *in vitro* appears to have no such effect within the limits of the experiment, and (3) judging from our inability to propagate the MEF1 strain of poliomyelitis virus in irradiated fetal and adult murine tissue, ionizing radiations hold little promise as a means of overcoming the innate resistance of certain animal cells to infection with poliomyelitis virus.

86 pages. \$1.08. MicA54-1896

STUDIES ON PLEUROPNEUMONIALIKE ORGANISMS (PPLO): I. THE PRESENCE OF NEISSERIA GONORRHOEAE AND PLEUROPNEUMONIALIKE ORGANISMS IN THE CERVIX UTERI. II. THE EFFECTS OF THE ADMINISTRATION OF ERYTHROMYCIN UPON NEISSERIA GONORRHOEAE AND PLEUROPNEUMONIALIKE ORGANISMS IN THE UTERINE CERVIX. III. SOME INVESTIGATIONS INTO THE NITROGEN METABOLISM OF PLEUROPNEUMONIALIKE ORGANISMS.

(Publication No. 8584)

Norman Leonard Somerson, Ph. D.
University of Pennsylvania, 1954

Supervisor: Harry E. Morton

Eighty-six women named as sexual contacts by men with gonorrhea were studied for the presence of pleuropneumonia-like organisms (PPLO) and gonococci. A statistically significant relationship between the presence of PPLO and the gonococcus was found. PPLO were isolated from 80 per cent of the 41 patients with gonorrhea. They were isolated in only 42 per cent of the 45 individuals in whom the gonococcus could not be detected.

The isolation of PPLO from this group of women did not appear to be directly associated with (1) leucorrhea, (2) gross genital pathology, (3) phase of the menstrual cycle, (4) previous penicillin therapy, and (5) culturing material from the abraded cervix, rather than from cervical mucus.

The role of PPLO as opportunists or commensals, and the possibility of these organisms representing a stable form of the gonococcus, is discussed.

Erythromycin, 3.6 gm., was administered orally to 24 ambulatory women with gonococcal infection proven by isolation of the organism from the cervix. Twenty-two patients (92 per cent) thereafter had negative cultures for the gonococcus; in 18, cultures were negative for 3 successive weeks, in 4 patients, 2 weekly follow-up cultures were obtained. None of the patients developed signs or symptoms suggestive of upper genital tract gonorrhea.

Prior to erythromycin therapy 18 patients (75 per cent) had both gonococci and pleuropneumonia-like organisms (PPLO) present in the cervix. Following therapy, pleuropneumonia-like organisms could still be isolated from 16 patients (67 per cent).

Side reactions consisting of diarrhea, abdominal cramps, nausea and vomiting occurred in 79.2 per cent of the patients. Sixteen per cent of the patients developed temporary vulvar or anal itching. In no instances were symptoms severe enough to require discontinuance of therapy.

Methods for growing pleuropneumonia-like organisms (PPLO) in 2 and 4 liter volumes were developed so that high cell concentrations suitable for metabolic studies could be obtained. Thallium acetate, added to the growth medium to prevent contamination, did not interfere with multiplication or metabolic reactions subsequently studied.

Using the Conway micro diffusion technique, an

aspartic acid deaminase was found to be present in pleuropneumonia-like organisms, strain Campo. The effect of varying the age of the cells, pH, and atmospheric conditions were determined for this system. Amination, occurring together with the deamination partially explained the relatively low amount of nitrogen liberated. Factors contained in liquid growth medium increased the activity.

Spectrophotometric techniques were employed to study possible interconversions of purines and pyrimidines. Cytidylic acid, 2, 6-diaminopurine, cytosine, and 5-methyl cytosine were not metabolized by cell suspensions of pleuropneumonia-like organisms. Adenine was converted to hypoxanthine and cytidine to uridine, as measured by shifts in absorption spectra. The presence of hypoxanthine was confirmed by paper chromatography and the rate of its formation measured indirectly by conversion to uric acid with xanthine oxidase. Conversion of adenine by pleuropneumonia-like organisms, strain 07, neared completion after one-hour reaction time.

62 pages. \$1.00. MicA54-1897

SOME KINETIC ASPECTS OF INFLUENZA VIRUS GROWTH

(Publication No. 8915)

Charles C. Wunder, Ph. D.
University of Pittsburgh, 1954

This work deals with relationships which will describe the multiplication of PR8 influenza A virus in the allantoic fluid of chicken embryos. Parameters and empirical functions necessary for the solution of such relationships were evaluated, and temperature dependencies of these parameters were investigated.

A second-order autocatalytic equation, which predicts the conventional type of sigmoid increase, was studied. This equation will not account for the reduction of virus yields which occurs with certain types of inocula. What is more, experimental values for virus concentrations lag approximately three hours behind those which this equation predicts. Superficial observations of most experimental growth curves have indicated an apparent lag of six hours. Lags of three hours have been reported only when concentrated inocula were employed.

In order to account for these and other details, a more elaborate system was proposed. It is essentially a combination of several simple explanations. This model assumes the existence of three different types of entity: infectious virus, noninfectious virus, and adsorption centers. Both types of virus entity are assumed to be adsorbed by centers at a rate proportional to the concentration of virus and the number of susceptible centers. The second-order rate constant for this adsorption was found to be 10^{-6} milliliter hours⁻¹. Once adsorbed, either type of virus entity can render the center insusceptible to more virus. The infectious entities can infect

while the noninfectious entities can "block" (prevent infection of) centers. Apparently, the infectious entity can act upon the center faster than the noninfectious one can. The virus concentration does not increase appreciably until new virus is released from infected centers faster than it is adsorbed by other centers.

Differential equations were developed to describe the rates of virus adsorption, virus release, center infection, and change in the number of susceptible centers. Several of these equations were combined and solved simultaneously. Curves for virus concentration as a function of time, as predicted by these equations, demonstrate significantly better

agreement with experimental data than do the more orthodox sigmoid curves. This Virus-Center-Adsorption Model offers a meaningful explanation of the lag time and its apparent variation with inoculum. It also serves as a quantitative method for predicting the total amount of virus which can be produced when different inocula are employed.

A new method for assaying influenza virus infectivity was developed. Preparations of chicken-chorioallantoic membranes are employed as the assay system. This method is less laborious, less expensive, and less space-consuming than other commonly used methods.

153 pages. \$1.91. MicA54-1898

BIOGRAPHY

AN ACCOUNT OF THE CIVIL WAR CAREER OF OLIVER OTIS HOWARD BASED ON HIS PRIVATE LETTERS

(Publication No. 8622)

John Alcott Carpenter, Ph. D.
Columbia University, 1954

Oliver Otis Howard, native of Maine, a graduate of Bowdoin College, and of the Military Academy (1854), experienced a religious conversion while on duty in Florida. His subsequent devotion to the principles of Christianity, including its emphasis upon humility, often conflicted with his desire for worldly distinction. The conflict between his religion and his military career became apparent during the Civil War in which Howard played an important role. Howard wrote frequent letters home during the war. These provide a basis for much of this work.

At the time of the attack on Fort Sumter, Howard was an instructor of mathematics at West Point. The opening of the war interrupted his plan of leaving the army for the ministry and he offered his services to the Governor of Maine. Upon receiving an offer of the colonelcy of the Third Maine Volunteers he resigned his commission in the regular army and joined his regiment in Augusta.

His regiment went to Washington and just prior to the Battle of Bull Run, Howard took command of a brigade which performed creditably in the battle.

Howard became a brigadier general of volunteers in September, 1861. He took part in the Peninsular Campaign where, at the Battle of Fair Oaks he received wounds in his right arm necessitating its amputation. After a period of convalescence he led a brigade in the closing stages of Second Bull Run, and he took part in the Battle of Antietam. At the Battle of Fredericksburg, Howard commanded a division.

In the spring of 1863 Howard commanded the Eleventh Corps at the Battle of Chancellorsville. This corps held the right of the Union line which Stonewall

Jackson attacked and forced back. Howard's responsibility for this defeat is a subject of controversy. He showed poor judgment in some respects, although there were extenuating circumstances. At Gettysburg, Howard had command of the Union troops during most of the first day's battle. His handling of the Union army that day has been criticized, but Howard's selection of Cemetery Hill as a defensive position had an important effect on the outcome of the battle.

In September, 1863 Howard's corps was sent to the vicinity of Chattanooga. The Eleventh Corps participated in the Battle of Chattanooga, and in the relief of Knoxville.

In the spring of 1864 Howard took command of the Fourth Corps and led it during the Atlanta Campaign until shortly after the battle of Atlanta when he was appointed commander of the Army of the Tennessee. Later, after the capture of Atlanta, he commanded the Right Wing of Sherman's army on the March to the Sea. Howard played an important part in the capture of Savannah, and was in command of the troops present in Columbia, S. C. at the time of the burning of that city.

Howard left the Army of the Tennessee shortly after Johnston's surrender to assume the duties of Commissioner of the Freedmen's Bureau.

Howard's performance as commander improved appreciably as the war progressed and he did his best work under Sherman. Before the end of the war he had become a brigadier general in the regular army. He was noted especially, however, for his Christian behavior. As a Christian he tried to alleviate civilian suffering and to maintain a high moral level amongst his troops. His pride, which he tried to keep under control, suffered much from the adverse criticism arising from his conduct at the battles of Chancellorsville and Gettysburg. Unfortunately for his military record, his name is usually associated with this conduct rather than with his outstanding performance in the West.

265 pages. \$3.31. MicA54-1899

GAMALIEL BRADFORD: PSYCHOGRAPHER

(Publication No. 8905)

Matthew Joseph Maikoski, Ph. D.
University of Pittsburgh, 1954

Chairman: R. H. Ware

This thesis is a study of the theory and practice of the art of psychography as manifested in the writings of Gamaliel Bradford. The thesis contains an introduction, five chapters of development, and a conclusion.

In the introduction psychography is properly placed among the biographical forms which arose in protest to the bulky Victorian life-narratives which somewhat "divinized" their human subjects. Psychography, on the other hand, insists on brevity and in treating both the good and the bad features of the character of human beings, while leaving conclusions to the reader.

Chapter Two focuses attention on the earliest signs of Bradford's psychographic tendencies, investigating such works as *Types of American Character*, several biographical essays contributed to different periodicals, and the initial definite psychographical volume, *Lee the American*, which brought Bradford fame. In all of these writings Bradford reveals a keen interest in the intellectual, physical, social, and moral traits of his chosen subjects.

Chapter Three deals succinctly with Plutarch, Tacitus, Clarendon, Saint-Simon, Lemaître, and Boissier and some of their writings, for in these men Bradford found roots of psychography and probably from these men learned lessons of selection and treatment.

Chapter Four stresses the influence of Sainte-Beuve on Bradford. From his acknowledged master Bradford learned the importance of anecdotes and the value of asking pertinent questions concerning a subject's views on religion, money, love, and nature. By means of the questions Bradford strove to find what was significant, characteristic, and habitual in the life and individuality of his subjects.

Chapter Five defines psychography in the words of Bradford as "the condensed, essential, artistic presentation of character" and proceeds to treat Bradford's theory and practice of psychography. Bradford early showed what could be done by applying psychological method and insight to the writing of biography. His own method swings clear of the formal sequence of chronological detail and uses only those deeds, words, and happenings that are revelatory of human traits. Bradford explained the difficulties - artistic, subjective, and objective - that beset the psychographer. Yet despite these difficulties, Bradford persists in his art because he felt that the chief advantage in studying successful or famous persons lies in finding that they in many ways resemble ordinary people.

Chapter Six attempts to give a panoramic view of the criticisms, both contemporary and posthumous, of Bradford as a man and as a psychographer. While much of the criticism is contradictory, in general

the impression is that Bradford did well what he had proposed to do: to compose exquisitely readable portraits in which motive and detail are blended in one clear image.

The general conclusion is that Bradford made biography interesting. He also gave it form, without losing sight of the fact that a distinction must be made between the use or interpretation of records and mere invention. Instead of imagining a telling incident after the fashion of the novelizing biographers of the twentieth century, Bradford sought deeply and widely in his sources for the meaningful fact or the revealing detail. He made such parts or remarks serve his purpose far better than any invention could have served it. At no time, however, did Bradford regard psychography as something he originated. Rather he gave credit to earlier writers in whose works he had detected some aspects of psychography. Then, too, it must be said that Bradford practiced the art of psychography more successfully and much longer than any other biographer, before his time or since.

It is uncertain if psychography has any permanent value. Yet, it deserves recognition, for it was a trend in the development of biography, a trend which placed the stress on personality rather than on content, style, or background.

215 pages. \$2.69. MicA54-1900

CHARLES E. A. GAYARRÉ, A BIOGRAPHY

(Publication No. 8582)

Edward Magruder Socola, Ph. D.
University of Pennsylvania, 1954

Supervisor: Robert E. Spiller

The lifelong interest in the history of Louisiana that impelled Charles Gayarré to write three separate works on the subject had its origins in the intimate connection which Gayarré felt, through his forebears, with the colonial past of his native state. Gayarré's father, grandfather, and great-grandfather had all been colonial officials in Louisiana during the period of Spanish dominion. His maternal grandfather, Etienne de Boré, had been largely responsible for the successful introduction of sugar as a staple crop in Louisiana during the 1790's. Others of his ancestors had played equally active parts in the civil and military affairs of eighteenth century Louisiana.

As a young man, Gayarré seemed destined to become a highly successful politician. He was something of a rarity in Louisiana at that time - a Creole of wealth and position who was well educated, equally fluent in French and English, and trained in the law - and as such he was a boon to those of the old Creole population who sought to maintain their supremacy in the political life of the state. His rise to local political prominence was rapid, culminating in his election to the U. S. Senate in January of 1835, three days

after his thirtieth birthday. But after his failure to take his seat in the Senate and the eight years which he then spent abroad, he never again succeeded in obtaining any office higher than that of Secretary of State of Louisiana. The frustrating experiences of his later political career can be attributed, in some part at least, to changing political and social conditions in Louisiana.

Until after the Civil War, Gayarré did not think of himself as a professional historian or man of letters; but his best work was done during the pre-war years, when he was interested primarily in politics and public life. His *History of Louisiana*, though an uneven and not completely satisfactory work, was based on extensive researches in the archives of France and Spain and has not been superseded by any subsequent work on the colonial period in Louisiana.

In his later writings and in his attitude toward the new generation of post-Civil War writers, Gayarré exhibited the tastes and prejudices of one whose concept of fiction had been formed by the Romantic novels of the era of Scott and Cooper.

Gayarré had considerable influence as an interpreter of Louisiana's past. His attacks on George W. Cable in 1885 and his addresses on the Latin race in Louisiana served to buttress a growing Creole mythology, which persists to the present day in Louisiana.

Gayarré's extraordinarily long and unusually varied career as historian, politician, pamphleteer, public servant, novelist, playwright, contributor to periodicals, and lecturer made him an interesting representative of the society in which he spent most of his ninety years. 362 pages. \$4.53. MicA54-1901

BIOLOGY — GENETICS

THE INDUCTION BY X-RAYS OF RECESSIVE
LETHALS IN THE MATURE SPERM OF
MORMONIELLA VITRIPENNIS (WALKER)

(Publication No. 8577)

George Brandon Saul, 2nd, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. P. W. Whiting

Mature males of the chalcidoid Hymenopteron *Mormoniella vitripennis* (Walker) were treated with X-rays at doses between 568 r and 5112 r and were mated to virgin females differing from them by an allele at a single locus. A statistically significant deviation from a 1:1 ratio of the alleles in the F-2 haploid male progeny of an unmated F-1 female indicated the presence in an irradiated sperm cell of a recessive lethal linked with the genetic marker. The numbers of lethals linked with two separate loci were computed for each dose administered.

No evidence was obtained against the assumption of a linear dose-action curve for recessive lethals linked with either of the visible markers studied. The combined data for the two loci also showed no significant departure from linearity. The mutation rate per roentgen was calculated as .004% for lethals linked with the R-locus and as .001% for lethals linked with the bl-locus. The combined rate for both groups of lethals was .005%.

The method used did not measure the spontaneous rate of mutation or indicate any differences in the numbers of lethals carried in the stocks used in the experiments.

The proportion of lethals linked with the R-locus is greater than the proportion linked with the bl-locus

at all doses of X-rays. Differences in radiosensitivities or crossing over frequencies of the chromosomes involved are suggested as explanations.

Recessive lethals can exert their effects on the wasps at any stage of development between the egg and the adult. Cultures were found containing dead eggs or wasps dead as larvae, "prepupae", or pupae.

Some visible mutations, most of low viability, were found. The most common type affected eye colors. 61 pages. \$1.00. MicA54-1902

STUDIES ON THE NUCLEAR CYTOLOGY OF
CHLAMYDOMONAS. I. MITOSIS. II. MEIOSIS.

(Publication No. 8578)

Moselio Schaechter, Ph. D.
University of Pennsylvania, 1954

Supervisor: E. D. DeLamater, M.D., Ph.D.

The studies of Moewus (1940) on *Chlamydomonas* have stimulated investigations of the hereditary mechanisms in this genus by Smith and Regnery (1950), Lewin (1952, 1953), and Sager (1953), among others. Knowledge of mitosis and meiosis, however, is not available in these organisms.

A study of mitosis was undertaken with *C. moewusii*, *C. dysosmos* and *C. reinhardi*. Impression smears were made from young cultures (18-36 hrs.) and fixed in Carnoy's solution. They were then hydrolysed in 1N HCl at 60° C., and stained with 0.25% azure A containing one drop of thionyl chloride per 10 ml. of dye solution and subsequently dehydrated by DeLamater's procedure (1951), and mounted in a resinous medium.

The pattern of mitosis does not vary greatly among these organisms. The interphase nucleus reveals a chromatinic network which condenses during prophase. Maximum contraction of the individual chromosomes is observed at late prophase. Squashed preparations of cells at this stage reveal the following chromosome numbers: *C. moewusii*, 36 ± 2 ; *C. reinhardi*, 18 ± 2 ; and *C. dysosmos*, 16 ± 1 . The chromosomes double as the nucleus goes into metaphase. Squashes of cells at this stage reveal approximately twice the above numbers of chromosomes, thus establishing the improbability of error in the counts due to non-synchronous chromosome division or due to breakage.

The elements of the achromatic figure were not seen, probably due to their lability to acid hydrolysis. During the metaphase, anaphase and early telophase stages, the nuclei appear as markedly condensed plates.

Meiosis was studied in *C. moewusii* with the aid of a chemically specific double stain which yields blue nuclei in both vegetative cells and zygotes, and magenta primary zygote membranes (DeLamater, Schaechter and Hunter, 1954). Germination of zygotes was accomplished by the procedure of Lewin (1949). The period of initial illumination was extended to 40-50 hours.

Early events in meiosis consist of filamentation of the chromatin with appearance of chromatinic granules. The granules appear to develop as aggregates of two, three or more discrete granules arranged in paired strings, and later become arranged as masses on parallel filaments which form a

concentric double ring. Diplotene-like loops and diakinesis-like configurations are observed within the individual masses composing the ring. The number of loops and of diakinesis-like configurations is in the order of 8 to 10. Two alternate interpretations are presented to explain the discrepancy between the number of these meiotic chromatinic units and the haploid chromosome counts. One is based upon the assumption that a normal meiotic pattern occurs, but cannot be properly visualized due to the difficulty in resolving such small structures. The other interpretation is presented as a tentative hypothesis, and postulates a fusion of non-homologous chromosomes into composites which act as units during their division. This interpretation could explain the discrepancy between the number of chromosomes in this species and the ten linkage groups found by Moewus (1940) in a closely related species, *C. eugametos*.

At the first meiotic metaphase a compact plate is formed which divides and remains highly chromatic until separation is completed. A characteristic interphase occurs between the two meiotic divisions. Prophase of the second division does not show a marked condensation of the chromosomes. Metaphase, anaphase and telophase of the second division resemble those of the first division. Four zoospores are usually formed under the conditions used here.

Two instances of simultaneous fusion of three gametes were observed. No concomitant nuclear fusion could be seen.

44 pages. \$1.00. MicA54-1903

BOTANY

AN INVESTIGATION OF SOME CHLOROPHYCEAE FROM JAMAICAN SOIL

(Publication No. 9205)

Walter Roger Herndon, Jr., Ph. D.
Vanderbilt University, 1954

Director: Dr. H. C. Bold

The need is emphasized for detailed morphological studies of certain unicellular Chlorophyceae for clarification of their taxonomy. The methods used in the study, in unialgal culture, of nine unicellular Chlorophyceae isolated from soil from Jamaica, B. W. I. are presented in detail.

Five new species of spherical, zoospore-producing genera of the order Chlorococcales are described, based on study of living and stained specimens in all phases of development. These are: *Chlorococcum diplobionticum* sp. nov., *Neochloris terrestris* sp. nov., *Neochloris gelatinosa* sp. nov., *Radiosphaera minuta* sp. nov., and *Planktosphaeria*

botryoides sp. nov. Generic disposition of these organisms is based upon the criteria established by Starr (1953), namely, the chromatophore type of the vegetative cells, presence or absence of pyrenoids in the vegetative cells and the type of zoospores produced. Specific disposition of each of the organisms has been based on comparison, in culture, with other species of the several genera.

Spongiochloris excentrica Starr is again described in confirmation of Starr's diagnosis of his isolate from soil from a widely different locality. Re-isolation of this alga is regarded as indicative of the validity and usefulness of the criteria established by Starr.

The existing confusion regarding the generic limits of certain unicellular Chlorophyceae capable of vegetative cell division is summarized, and several steps toward resolution of the problems involved are presented in the following paragraphs.

The genus *Chlorosarcina* Gerneck is formally emended to include only those unicellular Chlorophyceae having the capacity for vegetative cell division resulting in the production of non-fila-

mentous groups of cells which are characterized by the following constant attributes: 1. Vegetative cells with a hollow, spherical chromatophore; 2. Vegetative cells with at least one pyrenoid; 3. Zoospores of the Protosiphon-type, having two flagella of equal length and becoming spherical at quiescence. Chlorosarcina minor Gerneck is designated as the type species of the genus, and the description of this species is amplified. A second species, Chlorosarcina dissociata sp. nov., is also described based on data from stained and living specimens in all phases of the life cycle.

The genus Chlorosphaeropsis Vischer is formally emended to include only those unicellular Chlorophyceae having the capacity for vegetative cell division in which non-filamentous groups of cells are produced and which are characterized by the following constant attributes: 1. Vegetative cells with a reticulate chromatophore; 2. Vegetative cells with at least one pyrenoid; 3. Zoospores of the Protosiphon-type, having two flagella of equal length and becoming spherical at quiescence. A single species, Chlorosphaeropsis alveolata sp. nov., is described.

The lack of detailed knowledge concerning

nuclear condition, type of cleavage and zoospore type, as well as the use of unreliable characters in delimitation of earlier species are regarded as indicative of the need for comparative study of these organisms in culture. Accordingly, all previously described species of the genera Chlorosarcina and Chlorosphaeropsis (Chlorosphaera Klebs) are considered as nomina dubia pending further investigation of them in cultures.

The validity and utility of certain attributes used for taxonomic characters, including chromatophore type, presence of pyrenoids, zoospore type and nuclear condition, are discussed and confirmed. Several other attributes previously used taxonomically, among them method of sporangial dehiscence and the endophytic habit, are considered unreliable.

The nature of "vegetative cell division" and its relation to ordinal classification are considered. Removal of unicellular and colonial Chlorophyceae capable of true vegetative cell division into a new order, the Chlorosarcinales, is proposed. Abandonment of the order Tetrasporales and distribution of its genera among the orders Volvocales and Chlorococcales are suggested.

160 pages. \$2.00. MicA54-1904

CHEMISTRY

CHEMISTRY, BIOLOGICAL

THE BIOSYNTHESIS OF CHOLESTEROL

(Publication No. 8538)

Melvin Blecher, Ph. D.

University of Pennsylvania, 1954

Supervisor: Dr. Samuel Gurin

A literature survey is made relating to the subject of the biosynthesis of cholesterol. In vivo balance studies, in vivo tracer studies, and in vitro liver slice tracer experiments are discussed in detail, as are the origins of specific carbon atoms of cholesterol. The role of squalene and isoprene-like compounds as intermediates in the biosynthesis of cholesterol is discussed from both an experimental and theoretical point of view. Evidence concerning precursors of cholesterol having the steroid structure is also presented. Cholesterol synthesis in extrahepatic tissues and the influence of cell structure, hormones, and diet upon cholesterologenesis by the animal organism are also discussed.

Previous reports have raised the possibility that the utilization of acetoacetate for cholesterol may be accomplished without prior formation of acetone or acetate. It has also been demonstrated that the isotope of singly-labeled acetoacetate is not randomized by incubation with rat liver slices. It has more

recently been reported that somewhat more (2.4 to 5.7%) aceto-acetate is cleaved to acetic acid than had been previously believed. All of this work leaves unanswered the question as to whether acetoacetate, or a closely-related four-carbon precursor, is or is not incorporated into cholesterol as an intact four-carbon unit.

For these reasons, the behavior of acetoacetate labeled singly with C^{14} in either the carboxyl or methyl carbon atoms has been investigated. If acetoacetate were to be incorporated into cholesterol as an intact four-carbon unit, only a relatively few carbon atoms of cholesterol might be tagged; for example, methyl-labeled acetoacetate might possibly furnish the two angular methyl groups of cholesterol. If acetoacetate is decarboxylated prior to its conversion to cholesterol, as has been postulated by several workers in the field, then cholesterol derived from carboxyl-labeled acetoacetate might be expected to contain little or no radioactivity. To this end, radioactive cholesterol, biosynthetically prepared by incubating appropriately-labeled acetoacetate with surviving rat liver slices, was degraded by chemical means. Carboxyl-labeled acetoacetate was prepared by a new synthesis which is described.

The results demonstrate that acetoacetate is not incorporated into a single or limited portion of the cholesterol molecule; the methyl and carboxyl carbon atoms of acetoacetate were found to be distributed almost equally between the isoöctyl side chain and

ring structure of cholesterol. The methyl carbon atom of acetoacetate is a source of carbon atoms 17, 18, and 19 of cholesterol while the carboxyl carbon atom of acetoacetate is a precursor of carbon atom 10. Evidence is presented that the incorporation of singly-labeled acetoacetate into cholesterol follows precisely the same pattern exhibited by singly-labeled acetate. Evidence has been obtained suggesting that acetoacetate cannot be incorporated into cholesterol as an intact four-carbon unit without equilibration with two-carbon fragments at some stage of the biosynthesis. A mechanism is postulated by which singly-labeled, activated acetoacetate (acetoacetyl CoA) rapidly equilibrates with acetyl CoA leading to the formation of doubly-labeled acetoacetyl CoA which subsequently is converted to cholesterol by a pathway which does not involve acetyl CoA as an obligatory intermediate.

109 pages. \$1.36. MicA54-1905

SOME KINETIC STUDIES ON THE
REACTION OF TOBACCO MOSAIC VIRUS
WITH FORMALDEHYDE

(Publication No. 8882)

Thomas Edward Cartwright, Jr., Ph. D.
University of Pittsburgh, 1954

When tobacco mosaic virus reacts with formaldehyde, it is inactivated but no profound changes in its structure can be detected. The reaction causes an upward shift in the anodic electrophoretic mobility at pH 7 of the virus nucleoprotein and makes it less capable of generating color with ninhydrin. Fischer and Lauffer made some careful kinetic studies on the reactions which result in these phenomena. On the basis of their findings, they advanced three hypotheses. They postulated that there are special groups which are responsible for the inactivation of the virus when they react with formaldehyde. With respect to their reaction with the aldehyde these special groups might be one of three kinds. They might (1) react irreversibly and cause part of the charge change, (2) react irreversibly, decreasing ninhydrin color but not producing any effect on the charge, (3) produce an effect which is not related to either of the first two. If the special groups are among those in group (1), then the rate constants for inactivation and shift in electrophoretic mobility should have a constant ratio regardless of the conditions of the formaldehyde reaction. If the special groups are among those in group (2), then the rate constant for inactivation, k_v , should have a constant ratio with the rate constant of that process under any reaction conditions. In either case, this ratio is the number of special group present.

The experiments in this study were designed to elucidate the kinetics of the reactions which cause inactivation of the virus and the increase in electrophoretic mobility of the virus protein.

Tobacco mosaic virus was concentrated from the

expressed sap of infected *Nicotiana tabacum* plants by differential centrifugation. The virus was dissolved in phosphate buffers at pH 5.3, pH 6.6, and pH 7.7. Approximately 2% solutions of virus protein at three pH values were allowed to react with 2% solutions of formaldehyde in a water bath at 30°, 35°, and 40°. Samples taken at different time intervals were diluted with cold buffer to stop the reaction and were assayed for relative activity on *Nicotiana glutinosa* plants. Other samples taken at various time intervals were dialyzed against cold buffer, adsorbed onto collodion particles, and had their electrophoretic mobilities measured by the microscope method.

Results

When the logarithm of the fraction of activity remaining was plotted against the time of treatment, a straight line was obtained in all cases. The slope of this line converted to natural logarithms is the reaction rate constant for the inactivation process. These constants increased from two- to three-fold for a ten-degree temperature increase, and the values at pH 6.6 were higher than the ones at pH 5.3 and pH 7.7. The energies of activation estimated from the slope of the Arrhenius equation were at pH 5.3, 20,000 cal./mole, at pH 6.6, 18,000 cal./mole, and at pH 7.7, 13,000 cal./mole.

When the electrophoretic mobilities were plotted against the time of treatment, an equation, $\Delta U = 2.2(1 - e^{-k_e t})$, could be fitted to the data. The average initial mobility was 11.1 cm.²/volt sec. The electrophoretic runs were done in phosphate buffer at pH 5.6 which had an ionic strength of 0.03. The reaction rate constants for this process show an increase with pH. There is no tendency for the values at pH 6.6 to be higher than the others as was found for the inactivation reaction. The k_e values give the following heats of activation when they are used in an Arrhenius plot: at pH 5.3, 17,000 cal./mole, at pH 6.6, 46,000 cal./mole, at pH 7.7, 36,000 cal./mole.

Discussion

It is evident from the data obtained that the reaction which is responsible for the mobility increase of the virus protein is different from the reaction which causes the loss in infectivity of the virus. Because the pH effect on the rate constants for the biological inactivation is not paralleled by the pH effect on the rate constants for the change in electrophoretic mobility, no constant value for the ratio, k_v/k_e , is possible. Therefore, the special groups are not found among those which react irreversibly with formaldehyde and produce a change in charge.

78 pages. \$1.00. MicA54-1906

DETERMINATION OF PHOTOCHEMICAL ACTION
SPECTRA OF CARBON MONOXIDE-
INHIBITED RESPIRATION

(Publication No. 8952)

LaRoy Northrop Castor, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: Britton Chance

A new technique is described for identifying that respiratory enzyme in the cell which reacts directly with molecular oxygen. In the presence of carbon monoxide, the oxygen consumption of a wide variety of organisms decreases, but this CO inhibition can be counteracted by visible or ultra violet light. O. Warburg showed that this effect is due to the formation of a photo-dissociable complex of CO with the enzyme, at the end of the respiratory chain, which is oxidized directly by oxygen (called by him the oxygen transporting enzyme). He determined the relative efficacy of various wavelengths of light in reversing the CO inhibition, and thus was able to plot an "action spectrum", the ordinates of which were proportional to the absorption spectrum of the CO complex of the enzyme.

Warburg's classic experiment is unique in that it is the only method which will detect unequivocally that pigment in the cell which is catalytically active in respiration, and which reacts directly with oxygen. However, the experiment has, up to now, been performed for only a few types of cells, due to technical difficulties inherent in the manometric method for measuring oxygen consumption. The results which have been obtained show unexplained variations in number, position, and relative height of the absorption bands, variations which are not confirmed by direct spectroscopic examination of the cells.

The method described here replaces manometric apparatus with a platinum electrode, for detecting small changes in oxygen uptake. A single drop of cell suspension is inserted at the tip of the electrode, in a chamber containing CO and O₂. The electrode current is proportional to oxygen concentration within the drop, which, in turn, is determined by the oxygen consumption of the cells, balanced by entrance of oxygen through the surface of the drop. The drop is illuminated alternately by light of the wavelength under consideration, and by light of fixed color. The intensity of the latter is adjusted until no change in electrode current is observed on changing from one illumination to the other. The ratio of the two intensities (in quantum units) gives the ordinate of the action spectrum for that wavelength.

Electrical and optical components are described which are designed to permit determination of ordinates of an action spectrum with 1-2% reproducibility, and to locate peaks within 0.5 μ . Curves for the region 400 - 650 μ are given for yeast, mammalian ascites tumor cells, and *A. pasteurianum* - all showing oxygen transporting enzymes of the green hemin type, but having small differences in the locations of the peaks. A spectrum for *S. albus* is given, which indicates that the "CO binding pigment" of Chance is the oxygen transporting enzyme in this

bacterium, the first example of a pigment with a protohemin type spectrum acting in this capacity.

All the spectra presented here have been determined at room temperature, and have been found to have the form typical of CO complexes of hemoproteins, with no unexplained discrepancies. Thus for the first time, carbon monoxide action spectra of respiration have been fully correlated with spectroscopic data.

126 pages. \$1.58. MicA54-1907

REDUCED DIPHOSPHOPYRIDINE
NUCLEOTIDE REACTIONS

(Publication No. 8343)

Sterling Chaykin, Ph. D.
University of Washington, 1954

The investigation of the products formed on the incubation of DPNH in acid or in a system containing pyrophosphate and triose phosphate dehydrogenase have been described. The identity of the products has been shown to be complicated in the presence of bisulfite which (1) with the catalytic assistance of acid or triose phosphate dehydrogenase will oxidize DPNH to DPN; and (2) will cause the further reaction of the initial products of the acid and enzymatically catalyzed reactions of DPNH to form other products, which were studied in part. The product of the enzymatic reaction of DPNH has been shown to be converted to DPN by a yeast juice system. A consideration of possible structures of the products of the reactions of DPNH with triose phosphate dehydrogenase and weak acid is presented. The significance with respect to oxidative phosphorylation of the formation of the enzymatically produced product and its biological activity are discussed.

76 pages. \$1.00. MicA54-1908

ON THE NATURE AND MECHANISM OF ACTION
OF THE COPPER-PROTEIN TYROSINASE

(Publication No. 8652)

Hans Dressler, Ph. D.
Columbia University, 1954

On the Nature and Mechanism of Action of the Copper-Protein Tyrosinase:

Tyrosinase is an enzyme of wide occurrence in nature. It is believed to play a role in plant respiration, and is of known importance in pigmentation. The enzyme contains copper and has the ability to catalyze the aerobic oxidation of both monophenols and o-dihydric phenols.

The exchange of the copper atoms of the enzyme with radioactive copper has been studied in the present investigation. The enzyme was added to copper 64 solutions (substrate was added when desired) and

after a certain contact period these solutions were passed through a cation exchange resin column. The copper in the effluents was shown to be enzyme copper only. Any radioactivity in the column effluent must, therefore, have been due to radiocopper which was incorporated into the enzyme.

Resting tyrosinase (no substrate present) showed a small exchange. It was indicated that there is an inverse relationship between exchange and the purity of the preparation, as expressed in catecholase activity units per milligram of dry weight. This was interpreted as an exchange involving enzyme-copper in inactive sites.

The only substrates which could be used in the exchange experiments were the 4-t-butyl- and 4,5-dimethyl phenols and catechols. These substrates were shown to form relatively stable quinones on oxidation by tyrosinase. They do not form insoluble pigments, like most other phenolic enzyme substrates. These precipitates interfered with the exchange experiments.

The exchange of the acting enzyme (substrate present) was dependent on the type of tyrosinase preparation employed.

High cresolase enzymes showed little exchange, regardless which substrate was used. High catecholase enzyme preparations showed considerable exchange, depending on the type and amount of substrate used. Catechols produced higher radiocopper incorporation into the enzyme than monophenols. These findings were interpreted to suggest the presence of two distinct activity sites on the enzyme, i.e. separate cresolase and catecholase activity centers, both containing copper. It seems that only copper in catecholase sites can undergo exchange during enzyme action.

The fact that monophenols produced less exchange than catechols indicates that a monophenol is not oxidized to an *o*-dihydric phenol as the first step of the enzymatic reaction, as currently proposed. Rather, it seems possible that the monophenol is directly converted to *o*-benzoquinone, without involving the corresponding catechol as an intermediate.

It has been frequently proposed that *o*-quinones can react with monophenols to produce catechols, i.e. that tyrosinase has no monophenolase activity. Experiments were carried out with the stable 4-t-butyl *o*-benzoquinone which established that this reaction does not occur and that the presence of tyrosinase is necessary for the aerobic oxidation of monophenols.

In another experiment it was shown for the first time that an *o*-benzoquinone can act as primer during the enzymatic oxidation of monophenols.

66 pages. \$1.00. MicA54-1909

THE ENZYMATIC BREAKDOWN OF HYALURONIC ACID

(Publication No. 8718)

Alfred Linker, Ph. D.
Columbia University, 1954

Hyaluronic acid, a polysaccharide composed of equimolar amounts of glucuronic acid and N-acetylglucosamine, is hydrolyzed to a mixture of oligosaccharides by the action of testicular hyaluronidase. These oligosaccharides were found to be hydrolyzed to glucuronic acid and N-acetylglucosamine by β -glucuronidase and glucosaminidase present in liver and testis extracts. In the absence of glucosaminidase no acetylglucosamine was liberated.

It was demonstrated that the β -glucuronidase hydrolyzed only the glucuronidic bond on the non-reducing end of the hyaluronate oligosaccharides, while the glucosaminidase hydrolyzed the glucosaminidic bond on the non-reducing end after the glucuronidase had removed a uronic acid moiety. The alternating action of these two enzymes was thus shown to degrade the hyaluronate oligosaccharides stepwise to monosaccharides and a residual disaccharide. Neither of the enzymes seemed to attack internal linkages.

The glucosaminidase found in mammalian testis or liver, taking part in the reactions described above seemed to be the same enzyme which hydrolyzes N-acetylphenyl- β -D-glucosaminide.

Bacteria are another important source of enzymes hydrolyzing hyaluronic acid. Some differences between these bacterial hyaluronidases and testicular hyaluronidase had been demonstrated previously.

Hyaluronidases obtained from *Clostridium welchii*, pneumococci, staphylococci and streptococci were shown to hydrolyze hyaluronic acid to a disaccharide. This disaccharide was the same for all the bacterial enzymes used but differed from a disaccharide of known structure obtained from hyaluronic acid by acid degradation or testis enzyme hydrolysis.

It was demonstrated that the bacterial hyaluronidases modified the structural disaccharide unit of hyaluronic acid concomitant with hydrolysis of the polymer. This modification was shown to be a dehydration of the molecule giving a disaccharide containing an alpha, beta unsaturated uronic acid as end product.

100 pages. \$1.25. MicA54-1910

SOME ASPECTS OF THE MECHANISM OF ENZYMATIC TRANSAMINATION

(Publication No. 8755)

Pincus Peyser, Ph. D.
Columbia University, 1954

A highly purified preparation of glutamic-oxaloacetic transaminase, obtained from pig heart, catalyzed transamination between C¹³ labeled L-glutamate and its α -keto acid analogue, α -ketoglutarate.

L-Aspartate, incubated with an equimolar amount of α -ketoglutarate in the presence of the enzyme and D_2O , gave rise to L-glutamate, containing the amount of deuterium to be expected if one atom of deuterium was incorporated into each molecule. Exchange of the α -hydrogen of L-glutamate for deuterium occurred in the presence of the enzyme and in the absence of α -keto acids, and could be markedly increased by the addition of small amounts of α -ketoglutarate. With lower concentrations of enzyme, exchange occurred only with the addition of α -keto acids, α -ketoglutarate being more effective than oxaloacetate in this respect. The rate of exchange was faster with low concentrations of α -ketoglutarate than with high concentrations. Pyridoxamine phosphate could replace pyridoxal phosphate as coenzyme for this transaminase.

Crude extracts of pig heart, containing tyrosine- α -ketoglutaric transaminase, catalyzed the exchange of the α -hydrogen of L-tyrosine. Upon dialysis of these extracts most of its exchange activity was lost although its transaminase activity was unaffected. Activity could be restored partially by the addition of dialysate or boiled undialyzed extract, and completely by the addition of α -ketoglutarate. With increasing concentrations of α -ketoglutarate, the rate of exchange diminished.

The significance of these results in contributing toward an understanding of the mechanism of enzymatic transamination is discussed.

44 pages. \$1.00. MicA54-1911

THE RESOLUTION OF DL-ORNITHINE AND THE OPTICAL ROTATION OF ORNITHINE AND ALANINE PEPTIDES

(Publication No. 8757)

Jerome Polatnick, Ph. D.
Columbia University, 1954

The amino acid residues in a typical peptide can be considered to be present in three different chemical forms: (1) as the free amino end which is a substituted amino acid amide, (2) as middle pieces or in endo position which are substituted N-acyl amino acid amides, and (3) as the free carboxyl end which is a substituted N-acyl amino acid.

By using Van't Hoff's rule of optical superposition as a working hypothesis, the optical rotation of peptides may be considered to be an additive function of the contributions of the asymmetric carbon atoms of the constituent amino acid residues. The residue rotations can be evaluated with the aid of isomeric peptides, on the assumption that the residue rotations of the L- and D- forms of an amino acid residue in the same position in the peptide are equal but opposite in sign.

The residue rotations for several amino acids in specific peptides have already been reported by Brand and co-workers. In continuation of this problem a number of di- and tri-peptides of ornithine and alanine

were synthesized and the residue rotations of ornithine and alanine residues in these peptides calculated.

Optically pure L- and D- ornithine, which were needed for the synthetic procedures, were prepared from racemic ornithine. The papain catalyzed synthesis of di-isobutyryl-L-ornithine anilide from di-isobutyryl-DL-ornithine and aniline results in the separation of the insoluble L-anilide. L- and D-ornithine HCl are obtained by acid hydrolysis in good yield (55 and 45 per cent, respectively).

Eight isomeric dipeptides containing ornithine were synthesized by coupling the appropriate N-carbobenzyloxy amino acid with either the corresponding amino acid or amino acid benzyl ester according to the method of Boissonas; the resulting N-carbobenzyloxy dipeptides and N-carbobenzyloxy dipeptide benzyl esters were converted to the free peptides with palladium and hydrogen.

Five isomeric tripeptides containing ornithine were prepared by converting the appropriate N-carbobenzyloxy dipeptide hydrazides into the corresponding azides, according to the Bergmann technique, and then coupling with the desired amino acid benzyl esters. The free tripeptides were formed by treatment of the N-carbobenzyloxy tripeptide benzyl esters with palladium and hydrogen.

The residue rotations calculated for L-alanine residues in the free amino end (+21 to +26) and in the free carboxyl end (-64 to -76) agree satisfactorily with the values obtained previously by Brand and co-workers for L-alanine residues in peptides of glycine, alanine, and lysine.

The residue rotations calculated for L-ornithine residues give values of +73 to +77, -76 to -79, and -43 for the free amino end, endo position, and free carboxyl end respectively.

The data obtained for the residue rotations of the L-ornithine residues in peptides was used to calculate the specific rotation of the tripeptide H.Orn-Orn-Orn.OH (LLL), a compound for which stereo isomers were not prepared. The calculated value was -13.5° as compared to the observed value of -6.5° .

39 pages. \$1.00. MicA54-1912

STUDIES ON TYROSINASE

(Publication No. 8370)

Kerry Tsuyoshi Yasunobu, Ph. D.
University of Washington, 1954

In part A of the thesis, a spectrophotometric assay method for determining tyrosinase activity (catecholase) was devised and the applicability of the method studied. Using this method, it was possible to demonstrate borate inhibition of diphenol oxidation by tyrosinase. Also, spectrophotometric evidence was shown to verify the formation of a borate-diphenol complex and an equilibrium constant for the formation of the complex was calculated which agreed with that obtained from the enzymatic studies. Benzoate

and mono-halogen substituted benzoic acid inhibition of tyrosinase was also studied using this method.

In part B of the thesis, the action of tyrosinase on tyrosine peptides and proteins was studied. All of the tyrosine peptides were oxidized by mushroom tyrosinase but not by mammalian tyrosinase. Among the proteins studied, only alpha-lactalbumin was unequivocally oxidized. Oxygen uptake was observed with trypsin and alpha-chymotrypsin but not with DFP-trypsin, chymotrypsinogen, soy bean inhibitor-trypsin compound, and DFP-alpha-chymotrypsin in significant amounts. This evidence may be interpreted to mean that tyrosinase does not oxidize the intact tyrosine residues in trypsin and alpha-chymotrypsin but the autolysis products formed during the reaction, although other interpretations are possible.

92 pages. \$1.15. MicA54-1913

CHEMISTRY, INORGANIC

THE POLAROGRAPHIC DETERMINATION OF GALLIUM

(Publication No. 9214)

Herman Edward Zittel, Ph. D.
Vanderbilt University, 1954

Supervisor: Dr. F. L. Conover

The object of this investigation was to study the polarographic behavior of gallium and to determine those conditions under which gallium might be accurately determined quantitatively by polarographic methods.

The first part of this study was confined to an investigation of the effect of various maximum suppressors on the maximum exhibited by the gallium wave. In this connection various suppressors were tested, among them being thymol, brom-cresol green plus methyl red, cinchonine, methyl alcohol, ethyl alcohol and gelatin. Of these gelatin was the only one which was entirely efficient in suppressing the maximum.

The effect of various salts used as base electrolytes on the half-wave potential and diffusion current of gallium was studied. Among these were potassium chloride, sodium chloride, barium chloride, potassium sulfate and tetramethyl ammonium chloride.

The hydrogen ion concentration was found to have a great effect on the diffusion current. Because of this fact further work was done utilizing buffer solutions as base electrolytes. As one result of this work it was found that a decrease in gallium concentration moved the half-wave potential of gallium to a more positive potential. By proper selection of buffer, and limiting the gallium concentration, it was found possible to obtain a gallium wave which was clearly defined and free of any interference from the following hydrogen wave. Furthermore, under these conditions the diffusion current was a linear function of the gallium concentration.

A study was made of the possible interfering ions which might be encountered in polarographic work with gallium. It was found that among these only chromium offered serious interference.

The behavior of gallium at the dropping mercury electrode was clarified and a method for the routine polarographic determination of gallium was established.

63 pages. \$1.00. MicA54-1914

CHEMISTRY, ORGANIC

PYRAZINE SYNTHESSES

(Publication No. 8537)

Jules Blake, Ph. D.
University of Pennsylvania, 1954

Supervisor: Allan R. Day

The preparation and chemistry of 2, 3-diamino-5,6-dimethylpyrazine (I) and corresponding imidazo-[b]-pyrazines were investigated. The condensation of diacetyl and aminomalonamide to 3-hydroxy-5, 6-dimethylpyrazine-2-carboxamide was shown to proceed, under certain conditions, through a one to one molecular addition complex of the reactants, which appeared to be a clathrate compound. A series of acylaminopyrazines were prepared. The reaction of one equivalent each of chloroacetic anhydride and (I) gave the disubstituted product in preference to the monosubstituted one in every case. The replacement of chlorine in 2-acylamino-3-chloro-5, 6-dimethylpyrazines by the amino group did not proceed without the accompanying hydrolysis of the acyl-amino to the amino group. Diazotization of (I) was followed immediately by hydrolysis, even in the cold, to yield 2-hydroxy-3-amino-5, 6-dimethylpyrazine. A novel synthesis of 5-imidazolone-4-carboxamide was accomplished by reacting aminomalonamide with dimethylformamide and oxalyl chloride.

74 pages. \$1.00. MicA54-1915

INVESTIGATIONS ON STEROIDS

(Publication No. 8545)

Klaus Georg Florey, Ph. D.
University of Pennsylvania, 1954

Supervisor: Maximilian Ehrenstein

In the first part of this dissertation a review is presented of the biological methods by which oxygen can be introduced in various positions of the steroid molecule, particularly at carbon atoms 6 and 11. The methods discussed are adrenal perfusion experiments, incubations with adrenal slices and homogenates and microbiological fermentations.

This review is followed by the description of the preparation by partial synthesis of the 6 β - and 6 α -hydroxy derivatives of 17-hydroxyprogesterone and of Reichstein's compound S (17-hydroxy-11-desoxycorticosterone) from Δ^5 -pregnene-3 β , 17 α -diol-20-one and 3 β , 21-diacetoxy- Δ^5 -pregnen-17 α -ol-20-one respectively. The epimerization of 6 β , 11 α -dihydroxyprogesterone, by way of its diacetate, to 6 α , 11 α -diacetoxyprogesterone was studied. 6 α , 11 α -Diacetoxy-17 α -progesterone was isolated as a by-product of the epimerization reaction.

As far as they have been assayed the physiological activities of these 6-hydroxy steroids are discussed.

The third part of this dissertation is concerned with studies on the structure of ouabagenin, a cardiac aglycone.

Two acetylation products of ouabagenin, hitherto designated as ouabagenin acetates A and B, were found to be a tetraacetate and a triacetate respectively. The corresponding degradation products methyl tetraacetoxymethoxy-14 β -etiocholanate and methyl triacetoxymethoxy-14 β -etiocholanate were saponified to the same hexahydroxy-14 β -etiocholanate acid methyl ester. Selective N-bromoacetamide oxidation was studied on methyl 3 β , 5 β , 14, 19-tetrahydroxy-14 β -etiocholanate as a model substance. N-bromoacetamide oxidation of methyl hexahydroxy-14 β -etiocholanate and subsequent dehydration gave methyl 3-keto-tetrahydroxy- Δ^1 -14 β -etiocholanate. Treatment of this compound with acetic acid led to aromatization of ring A of the ouabagenin molecule; acetylation furnished a diacetate which could be further dehydrated to methyl 3-keto-diacetoxy-mono-hydroxy- $\Delta^{1,4}$ -14 β -etiocholadienate. This series of reactions constitutes proof for the presence of hydroxyl groups in positions 1 β , 3 β , 5 β and 19 of the molecule. Results obtained by chromic acid oxidation of methyl triacetoxymethoxy-14 β -etiocholanate indicate that the unacetylated secondary hydroxyl group of this compound is located in position 1 β .

Tritylation of methyl hexahydroxy-14 β -etiocholanate gave a monotrityloxy and a ditrityloxy compound. The detritylation product of the triacetate of the monotrityloxy compound proved to be identical with methyl triacetoxymethoxy-14 β -etiocholanate.

162 pages. \$2.03. MicA54-1916

DISPLACEMENT OF THE NITRO GROUP DURING ANALYSIS OF NITROPHENOLS AND NITROANILINES BY THE METHOD OF KOPPESCHAAR

(Publication No. 8556)

Leroy Dennis Johnson, Ph. D.
University of Pennsylvania, 1954

Supervisors: Ernest C. Wagner and Wallace M. McNabb

A study of the Koppeschaar bromination procedure as applied to certain nitrophenols and nitroanilines disclosed that excess aqueous bromine is able to force the displacement of the nitro group, as

indicated by consumption of bromine in excess of that calculated for normal bromination, and by presence of nitrous acid in the reaction liquid. The agents responsible for this displacement may be free bromine, or hypobromous acid, or both. The displacement ordinarily affects the nitro group when ortho or para to hydroxyl, but in a few cases a meta-nitro group was dislodged. The consumption of bromine in excess of that calculated increases with time, but in a few cases it was found to reach a maximum and then to diminish slightly. Normal bromination usually is complete in five to ten minutes; prolongation of the period beyond thirty to sixty minutes is ordinarily without advantage and may admit sensible error due to the displacement reaction. Because of the rapidity of normal bromination the effect of temperature, thru the range 0 - 30° C., is scarcely noticeable. Displacement of the nitro group increases with temperature, and is sensibly retarded by operation below room temperature, e. g., at 0 - 10° C. Increase in the acidity of the bromination mixture retards both normal bromination and the displacement reaction. Increase in the amount of bromine liberated in contact with the sample has small effect upon either the normal or the displacement reaction. Certain nitrophenols, e. g., the nitroresorcinols, are oxidized by aqueous bromine and consume excessive amounts of bromine. Results obtained for such compounds by the Koppeschaar procedure have no analytical significance. Displacement of the nitro group, as indicated by presence of nitrous acid in the liquid, is associated with a fugitive end-point in the titration with standard thiosulfate solution, the starch-iodine color returning promptly and persistently.

The displacement reaction is believed to produce initially nitric acid, from which nitrous acid results by secondary reaction. Consideration of sixteen reactions that may occur in the complex reaction mixture indicates the possibility that bromine and nitrous acid may be both consumed and regenerated in the system, which presumably reaches a steady state with respect to a number of interlocking equilibria, with some reactions becoming quiescent after a period because concentrations or reactants are below threshold values. Experiments to test whether or not the displacement of the nitro group involves its replacement by bromine, by attempting the isolation and identification of the product, were indeterminate but in no case positive, the results obtained suggesting destructive changes.

By application of certain of these observations and conclusions a method for the determination of 2,4-dinitrophenol and picric acid when present together has been elaborated and is described.

57 pages. \$1.00. MicA54-1917

2, 4-DINITROPHENYLHYDRAZONES OF α -HALO KETONES

(Publication No. 8698)

Arthur Francis Kirby, Ph. D.
Columbia University, 1954

In a study of the action of carbonyl reagents on α -halo ketones the following 2,4-dinitrophenylhydrazones (DNP's) were prepared. DNP of: 2-bromocyclohexanone (Ib), 2-chlorocyclohexanone (If), 6,6-dimethyl-2-bromocyclohexanone (IIb), α -bromoacetophenone (IIIb), α -bromopropiophenone (IVb), α -bromobutyrophenone (Vb), 2-bromo-1-indanone (VIb), 2-bromo-1-tetralone (VIIb), 2-bromobenzosuberone (VIIIb), 8-bromo-2,3-benzocyclooctene (2)-one-1 (IXb), and 2-bromo-1-keto-1,2,3,4-tetrahydrophenanthrene (XIIIb). When solutions of the halo hydrazones Ib, If, IIb, IVb, and IXb in glacial acetic acid were kept at their boiling points, smooth dehydrohalogenation took place. No loss of hydrogen halide was observed when IIIb, VIb, VIIb, and XIIIb were treated similarly. VIIIb underwent partial and sluggish dehydrohalogenation. These differences in reactivity are ascribed to a steric inhibition of resonance associated with the size and geometry of the alicyclic ring fused onto the benzene ring. Many of the α -halo ketones were treated with glacial acetic acid and 2,4-dinitrophenylhydrazine (Mattox-Kendall Reaction) and in every instance the results were the same as those observed using the corresponding α -halo hydrazones. This suggests that α -halo DNP's are intermediates in the Mattox-Kendall reaction.

The replacement of halogen by methoxyl in the DNP's (by action of methanol) appeared to be less sensitive to structural variations; thus with the exception of IIIb, which is a primary α -halo DNP, all the halo DNP's underwent methanolysis. The competition between elimination and replacement was brought out in the replacement of halogen by acetoxyl when sodium acetate or zinc chloride was added to the acetic acid solution of certain α -halo DNP's. The structures of the α,β -unsaturated hydrazones resulting from acetic acid dehydrohalogenation and in two cases also from dehydrohalogenation using potassium acetate-methanol solution were substantiated by ultraviolet and infrared data. In one instance, (IVb), the acetic acid treatment gave what appears to be an α,β -unsaturated azo structure. A general scheme for these reactions is discussed.

The infrared and ultraviolet absorption spectra of forty-three 2,4-dinitrophenylhydrazones (DNP's), including several pairs of geometrical isomers about the C=N bond, have been examined. A method for the assignment of configuration (*syn*- or *anti*-) to most of the DNP's studied has been developed. This method is based on two general observations: 1) In one isomer of a pair of α -methoxy DNP's (for example, the pair of α -methoxypropiophenone DNP's IVcA and IVcB) the band corresponding to the N-H stretching vibration appeared (broader and stronger) shifted by about $0.1\ \mu$ in the direction of longer wave lengths, relative to the unsubstituted DNP (i.e., propiophenone DNP IVa, in the example used). Hence,

in that isomer, the N-H and CH_3O groups interact and must therefore be on the same side of the C=N bond. 2) The ultraviolet absorption maximum of *syn*- α -methoxypropiophenone DNP (IVcA) (NH- and CH_3O on the same side of the C=N bond) appeared displaced by $+5\ \text{m}\mu$, relative to propiophenone DNP (IVa), while the maximum of *anti*- α -methoxypropiophenone DNP (IVcB) (NH- and CH_3O on opposite sides of the C=N bond) appeared displaced by $-16\ \text{m}\mu$, relative to IVa. On the assumption that the hypsochromic shift is due to a change in configuration about the C=N bond, the propiophenone DNP at hand is considered to be the *syn*-isomer (IVaA). The effect of α -substituents (Cl, Br, CH_3O , AcO, α,β -unsaturation) of ring size and shape, within a given stereochemical series, on the ultraviolet absorption spectrum of DNP's has been assessed and interpreted in terms of stabilization of excited and ground states and of steric inhibition of resonance.

76 pages. \$1.00. MicA54-1918

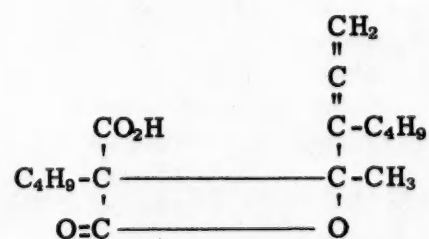
STRUCTURE OF THE DIMERIC ACID PRODUCED DURING THE CARBONATION OF GRIGNARD REAGENTS FROM PRIMARY PROPARGYLIC BROMIDES

(Publication No. 8906)

Joseph S. Matthews, Ph. D.
University of Pittsburgh, 1954

The purpose of this study was to elucidate the structure of the dimeric acid produced during the carbonation of Grignard reagents from primary propargylic bromides. In this case the bromide was 1-bromo-2-heptyne and the dimeric acid produced was $\text{C}_{15}\text{H}_{23}\text{O}_2\text{CO}_2\text{H}$.

The structure of the dimeric acid, $\text{C}_{15}\text{H}_{23}\text{O}_2\text{CO}_2\text{H}$, was shown to be α -butyl- α -carboxy- β -methyl- γ -butyl- β -hydroxy- γ,δ -hexadienoic acid β -lactone,



This structure was supported by the following evidence:

1. Infrared analysis showed the presence of an allene band. This was substantiated by hydrogenation because after the absorption of two moles of hydrogen, the allene band was not present in the infrared spectrum of the hydrogenated product.

2. The infrared spectrum of the dimeric acid also showed the presence of a free carboxyl group. On titration with base only one free carboxyl group was found.

3. The dimeric acid and its hydrogenated product, $C_{15}H_{27}O_2CO_2H$, each lost one mole of carbon dioxide when refluxed in benzene with a trace of sulfuric acid catalyst. The decarboxylated products were found to be polymeric as shown by neutralization equivalents.

4. The hydrogenated product, $C_{15}H_{27}O_2CO_2H$, like the dimeric acid, titrated as a monocarboxylic acid at room temperature. However, when it was refluxed with excess alkali and back titrated with acid, the hydrogenated product showed the presence of two carboxyl groups. Nevertheless, when the hydrogenated product was reacted with diazomethane in ether solution only a monomethyl ester was obtained, again showing that there was only one free carboxyl group.

5. On distillation the hydrogenated product decarboxylated, yielding α -butyl- β -methyl- γ -ethyl- β -hydroxy octanoic acid β -lactone, $C_{15}H_{28}O_2$, contaminated with some of the α, β -unsaturated acid formed by loss of carbon dioxide from the β -lactone component instead of the free carboxyl group.

6. The $C_{15}H_{28}O_2$ was reacted with lithium aluminum hydride and hydrolyzed with sulfuric acid yielding an unsaturated monohydric alcohol. When the reaction was hydrolyzed with sodium hydroxide the product was a diol.

7. The $C_{15}H_{28}O_2$ was also reacted with diazomethane in a water-methanol solution to yield a mixture of α, β - and β, γ -unsaturated esters which contained predominantly the β, γ -unsaturated ester, methyl 2-butyl-3-(3'-heptyl)-3-butenate.

8. The mixture of unsaturated esters was cleaved by ozonolysis to yield methyl α -ketoheptanoate. 83 pages. \$1.04. MicA54-1919

VINYLOGS OF HINDERED CARBOXYLATE IONS

(Publication No. 9118)

George William Parshall, Ph. D.
University of Illinois, 1954

p-Duroylphenol, a vinylog of duroic acid, has been found to condense with tertiary alkyl Grignard reagents to give 6-*t*-alkyl-4-keto-1-cyclohexenyl duryl ketones in good yield. The product obtained by condensation with *t*-butylmagnesium chloride enolizes readily to give 2-*t*-butyl-4-hydroxy-2,3-dihydrophenyl duryl ketone. This tautomeric system is remarkable in that both diketone and the enol are stable in the solid state, but can be interconverted easily by recrystallization from certain solvents. The enol, which is also a vinylog of a carboxylic acid, forms an enol ether when it is subjected to esterification conditions. The methoxyl group of the methyl ether is readily displaced by the alkyl radical of a tertiary alkyl Grignard reagent. An example is the reaction of 2-*t*-butyl-4-methoxy-2,3-dihydrophenyl duryl ketone with *t*-butylmagnesium chloride to give 2,4-di-*t*-butyl-2,3-dihydrophenyl duryl ketone. The latter was also prepared by treating *p*-*t*-butylphenyl duryl ketone with *t*-butylmagnesium chloride.

p-Duroylphenol has been found to react with some primary and secondary alkyl Grignard reagents to give *p, p'*-diduroylbiphenyl in low yields. This bi-

molecular reduction product was also obtained when *p*-bromophenyl duryl ketone was treated with free radical reducing agents such as the binary mixture, magnesium-magnesium iodide, and the mixture, methylmagnesium iodide-cobaltous chloride.

p-Bromophenyl duryl ketone was found to react with *t*-butylmagnesium chloride to give a mixture of *p*-*t*-butylphenyl duryl ketone and 2,4-di-*t*-butyl-2,3-dihydrophenyl duryl ketone. The latter is probably formed by the reaction of the simple displacement product with excess Grignard reagent. Treatment of *o*-bromophenyl duryl ketone with *t*-butylmagnesium chloride gave *p*-*t*-butylphenyl duryl ketone in low yield. *m*-Bromophenyl duryl ketone also gave trace amounts of the same product.

Treatment of anisyl duryl ketone, a vinylog of methyl duroate, with sodium under the conditions of the acyloin condensation gave a bimolecular reduction product which has been tentatively designated as 4',6'-diduroyl-3-methoxy-1,2-dihydrobiphenyl. Treatment with the binary mixture, magnesium-magnesium iodide, under similar conditions gave a microcrystalline yellow solid which appears to be a magnesium complex of exceptional stability.

58 pages. \$1.00. MicA54-1920

A KINETIC STUDY OF THE BECKMANN REARRANGEMENT OF SOME ALIPHATIC KETOXIMES

(Publication No. 9210)

Paul Thigpen Scott, Ph. D.
Vanderbilt University, 1954

Supervisors: Dr. D. E. Pearson and Dr. L. J. Bircher

The rates of rearrangement of cyclopentanone, cyclohexanone, diisobutyl, diisopropyl, diethyl, and acetone oximes in 94.5% sulfuric acid were determined. Concentrations of approximately 0.001 mole of the oxime in 10 ml. of 94.5% sulfuric acid were used in making the rate studies. Rate studies were made at five different temperatures for acetone oxime and at three different temperatures for each of the other compounds studied.

A new method for following the rate of the Beckmann rearrangement of oximes in 94.5% sulfuric acid was developed and used in obtaining the rate data. This method consisted of analyzing for the amount of unrearranged oxime present at various time intervals. The unrearranged oxime was analyzed for by hydrolyzing it to the corresponding ketone which was converted, as it formed, to the 2,4-dinitrophenylhydrazine. The hydrazone derivative was then extracted with carbon tetrachloride and analyzed colorimetrically. A Coleman Model 11 Spectrophotometer was used for acetone, diethyl and cyclohexanone oxime working at a wave length of 425 m μ , and a Beckman Model DU Spectrophotometer was used for diisobutyl, diisopropyl and cyclopentanone oxime working at a wave length of 410 m μ .

Before the rate studies were made solutions of the oximes of known strength were analyzed by the method described above, and a standard curve of optical density vs. concentration of oxime was prepared. Samples removed from the reaction vessel during

the rate study were analyzed by the same procedure used in preparing the standard curve. The concentration of oxime corresponding to the measured optical density was read from the standard curve.

The rearrangement of the six ketoximes studied showed first order kinetics with respect to the concentration of oxime. The rate constants were evaluated by the method of least squares from the slope of the line obtained by plotting log concentration of oxime vs. time. Activation energies were calculated by the method of least squares from the slope of the line obtained by plotting log k vs. $1/T$. The entropies of activation at 50.90° C were calculated by means of Eyring's equation,

$k = e \frac{kt}{h} e^{-E/RT} e^{\Delta S^\ddagger/R}$. The data obtained is summarized in the following table.

KINETIC DATA				
Oxime	T, °C	$k \times 10^3 \text{ min.}^{-1}$	$E_{\text{act.}}, \text{kcal.}$	$\Delta S^\ddagger *$
Cyclohexanone	30.00	0.557	24.7	-2.23
	40.90	2.31		
	50.90	7.85		
Acetone	90.66	1.17	30.1	0.58
	95.82	2.10		
	98.43	2.81		
	107.52	7.43		
	111.74	11.5		
Diethyl ketone	50.90	1.48	25.4	-3.41
	60.31	4.49		
	70.47	13.9		
Diisopropyl ketone	21.86	2.36	23.5	-1.07
	30.66	7.55		
	40.90	26.9		
Diisobutyl ketone	40.43	1.47	25.7	0.01
	50.59	5.34		
	60.39	17.3		
Cyclopentanone	51.00	1.17	26.9	0.87
	60.92	4.09		
	69.90	11.8		

* ΔS^\ddagger in entropy units. Values for 50.90° C.

The results of the rate studies were correlated with known inductive effects of the substituent alkyl groups in the four non-cyclic ketoximes. The rate of rearrangement of the two cyclic ketoximes, cyclohexanone and cyclopentanone, were discussed in relation to the relative stability of an exo double bond when associated with a five-membered ring system and when associated with a six-membered ring system.

108 pages. \$1.35. MicA54-1921

THE KINETICS OF THE HYDROGENATION OF TRIGLYCERIDES

(Publication No. 8913)

Leonard Joseph Swicklik, Ph. D.
University of Pittsburgh, 1954

The purpose of this study was to determine the course and the rate of the hydrogenation of a simple highly purified monethenoid triglyceride component of a naturally occurring oil namely, triolein, and to determine the rate laws for the disappearance of the original reactant, the production and disappearance of the intermediate, and the production of the completely saturated product.

Highly purified oleic acid was prepared from virgin grade olive oil and converted into a highly purified synthetic triolein by a direct esterification procedure. Three hydrogenations were performed at varying temperatures and pressures in the presence of a nickel catalyst purchased from Harshaw Chemical Company (Ni-0501-F). The hydrogenations which were carried out at moderate pressures were conducted in a Parr No. 4501 medium pressure hydrogenation unit; the hydrogenation carried out at atmospheric pressure was conducted in a 500-milliliter three-neck round-bottom flask. In every case a 200-gram charge of triolein and 0.4 per cent nickel catalyst concentration were used with the other conditions varying as follows: Hydrogenation No. 1: temperature, 125° C.; pressure, 65 pounds gauge; Hydrogenation No. 2: temperature, 175° C.; atmospheric pressure; Hydrogenation No. 3: temperature, 175° C; pressure, 65 pounds gauge. Samples were withdrawn at carefully noted time intervals as the hydrogenation proceeded. Each sample withdrawn was analyzed with respect to total unsaturation by a modified Wijs procedure used to determine iodine values; saturated component by a Bertram alkaline permanganate procedure and trans component by an infrared spectrophotometric method which is based on the difference of absorbance of the trans, cis and saturated component at 966.8 wave numbers. In every case the cis component was determined by difference.

The effect of the operating variables on the composition of the hydrogenated triolein was studied by comparing the amount of trans isomer formed at certain relatively high and relatively low iodine values.

The mechanism and course of the catalytic hydrogenation of triolein which was proposed in this study was general enough to include as special cases all mechanism that seem reasonable under the assumption that only three chemical species, cis, trans, and saturated components, are involved in the reaction. It was further assumed that all cis and all trans components hydrogenate at the same rate and, because the reaction is heterogeneous, that the rate of the hydrogenation would be a function of the extent of the reaction and, hence, that the effectiveness of the catalyst is a function of the composition of the reacting system and increases as the reaction proceeds. Rate laws governing the proposed mechanism and the above

assumptions were developed and applied to the experimental data.

The effect of the operating variables on the composition of the hydrogenated triolein indicated that an increase in both temperature and catalyst concentration caused an increase in the amount of trans isomers formed during the hydrogenation. An increase in pressure caused a decrease in the amount of trans isomers formed. It was also shown by experiment that trans isomers do not form in the absence of hydrogen.

The kinetic study substantiated the existence of an equilibrium between cis and trans isomers over part of the reaction especially noted at the high temperatures. Furthermore, the mechanism proposed along with the postulation that the effectiveness of the catalyst increases as the reaction proceeds was, in theory, sufficient to explain the experimental data.

93 pages. \$1.16. MicA54-1922

CHEMISTRY, PHARMACEUTICAL

THE ACTION AND RECOVERY FROM THE EFFECTS OF CERTAIN STIMULANTS AND DEPRESSANTS ON INDIVIDUAL FIBROBLASTS IN A PERFUSION CHAMBER

(Publication No. 8900)

Joseph Anthony Kuntz, Ph. D.
University of Pittsburgh, 1954

Individual fibroblasts grown in a perfusion chamber were selected from 24-hour old cultures of chicken fibroblasts and exposed to chemicals of known or suspected pharmacological action and their responses recorded and studied. Some of the drugs used were: sodium pentathal, pentobarbital sodium, morphine sulfate, codeine sulfate, phenobarbital, novocaine, strychnine sulfate, barbituric acid, benzedrine sulfate, tubocurarine chloride, and others. Various "cytosyndromes" were distinguished as: bleb formation on the surface of the cell membrane, vacuolization (here equivocated to an expansion of the mitochondrial cortex), violent shrinkage of the cell, "boiling effect", and the subsequent reversible nature of these responses after the drugs were removed. Intracellular organelles, especially mitochondria, were studied and a decrease in number and size noted for certain sedatives.

A method, used to a limited extent by several other workers, for growing cultures in a perfusion chamber was considerably changed and used as a tool to study the first and immediate responses of individual fibroblasts that were treated with various stimulants and depressants. A number of advantages that this method has over the conventional method of studying the effects of drugs on living cells in vitro are: (1) the concentration of the drug was maintained; (2) the drug was easily flushed out of the environment

of the cells; (3) the responses of individual cells to a given drug were observed during the entire experimental period; (4) the dosages were repeatedly given to the same cell; (5) the gas tension was regulated and actually controlled because of the addition of the glass perfusion line to the perfusion chamber.

Cultures of chicken embryo fibroblasts were grown on circular coverslips in a medium of plasma and chick embryo extract and transferred to the two-holed stainless steel perfusion chamber. This structure permitted the perfusion of normal medium through the chamber. An experimental medium, consisting of the control medium plus a drug, perfused in a similar manner. Changes in the appearance of the cell were recorded by cinephotomicrography through an oil immersion lens of a phase contrast microscope.

59 pages. \$1.00. MicA54-1923

CHEMISTRY, PHYSICAL

AN ULTRASONIC INVESTIGATION OF SOME ORGANIC ESTERS

(Publication No. 9204)

Alonzo Freeman Coots, Ph. D.
Vanderbilt University, 1954

Supervisor: Louis J. Bircher

The purpose of this study was to design and construct a device with which the velocities of sound might be measured very precisely in the members of a series of chemically related liquids, and then to investigate the relationship between the chemical constitution of these substances and the rate of sound propagation within them. Since the velocity of sound in any substance is a function of the size and shape of, and the forces between, the molecules of that substance, it may be expected that knowledge regarding molecular properties of substances can be obtained from sound velocity data.

The velocity of sound was measured in twelve normal aliphatic esters and five normal benzoate esters at two temperatures, 30°C. and 40°C. Also, the velocity of sound was measured in two of the aliphatic esters (ethyl acetate and n-propyl acetate) and in the benzoates at 50°C. The densities, refractive indices and the viscosities of these seventeen esters were determined at 30°C.

The adiabatic compressibility, molar sound velocity, molar refraction and van der Waals' "b" were calculated for each of these esters from the measured sound velocity, density and refractive index.

Various relationships between the velocity of sound and molecular weight are discussed. A plot of sound velocity versus $(3RT/M)^{1/2}$ was shown to be linear for the aliphatic esters of molecular weight greater than ethyl n-butyrate. A qualitative explanation is proposed to account for the deviation of the esters of lower molecular weight.

The influence of temperature on the velocity of sound was investigated. For the esters studied the sound velocity was found to decrease linearly with increasing temperature over the range of temperature investigated.

The molar sound velocity was shown to increase linearly with molecular weight for the esters investigated. Also, it was found that a linear relationship exists between the molar sound velocity and molar refraction in the homologous series of esters.

In addition to the study made on the esters the velocity of sound was determined in mixtures of *t*-butylbenzene in isobutylbenzene to determine how the velocity of sound varies with composition in an essentially ideal solution. The results indicate that the sound velocity varies linearly with composition in this mixture.

112 pages. \$1.40. MicA54-1924

THE THERMAL EXPANSIVITIES AND KINETIC BEHAVIOR OF SOME MAGNESIUM-CADMIUM ALLOYS IN THE ORDER-DISORDER RANGE

(Publication No. 8892)

Richard Alfred Flinn, Ph. D.
University of Pittsburgh, 1954

The three compositions of the alloy system magnesium-cadmium which exhibit ordered structures were studied using a dilatometric method. The thermal expansivities were determined for the alloys Mg_3Cd and MgCd_3 in the temperature range from 25°C. to 200°C. For the system MgCd the expansivity was measured from 25°C. to 270°C. The order-disorder transformations of these alloys are within these temperature limits.

The transformation in the alloy MgCd_3 at about 70°C. occurred with a considerable change in volume and over such a period of time that it was suitable to study the kinetics of the process by observing the rate of change of volume. Minute changes in volume were detectable because of the innate sensitivity of the dilatometric method, and hence it was possible to follow the transformation in detail.

The dilatometer was machined from stainless steel and was designed in such a way that a cylindrical sample having a volume of about ten cubic centimeters could be introduced and yet the volume of the chamber was reproducible. A capillary was attached to the main body by means of a Kovar-to-glass seal. The apparatus was immersed in a constant temperature bath.

The resultant expansivities were compared with those calculated using X-ray data, and possible explanations for the slight discrepancies were discussed. The measured expansivity of MgCd was compared with that calculated using Gruneisen's equation. Volume changes as calculated from the linear expansivity measurements made on polycrystalline samples of this system by Hirabayashi were found to disagree considerably with those measured by this method.

The kinetic study of MgCd_3 showed several interesting features. The total time required for an isothermal ordering transformation at some temperature below the critical point was found to depend strongly upon the extent of superheating which the sample had undergone prior to quenching. This behavior was related to the concept of germ nuclei as discussed by Avrami. It was also found that near the critical ordering temperature the largest fraction of the total transformation seemed to be characterized by a constant rate. This was indicative of a zero-order reaction. No theoretical basis for such a rate could be found, but it was suggested that possibly the reaction does not occur by nucleation and growth. One alternative mechanism mentioned was that described as homogeneous, in which long-range order results from a continual increase of short-range order.

75 pages. \$1.00. MicA54-1925

ALKALI METAL STUDIES II:
CONDUCTANCES IN METHYLAMINE

(Publication No. 8546)

Frederick C. Forsgard, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. E. Charles Evers

In this investigation an extension has been made in the study of the following subjects:

(1) Experimental conditions relating to the stability of metal solutions. It may be concluded that absolute cleanliness, the attainment of the highest possible ultimate vacuum before distilling potassium metal and solvent into the cell, and adequate flaming of the container during outgassing are essential in preparing the solutions for conductance measurements.

(2) The order of the reaction of metal with methylamine in these solutions. Quantitative data was obtained for the rates of this reaction which is the cause of the instability of these solutions. By plotting the electrical resistance of a solution of potassium metal in methylamine against time, it is shown that the time rate of change of concentration of metal is a constant and that the reaction therefore is of zero order. Accordingly, it seems evident that there is little or no catalytic activity shown by the reaction products – but probably reaction occurs on the glass surfaces of the containing vessel. Previously it was thought that the reaction of metal with solvent was autocatalytic in nature.

(3) The development of a conductivity cell employing the principles learned from the stability studies. Such a cell has been fabricated and techniques associated with the preparation and handling of metal solutions have been developed.

(4) The solubility of potassium metal in methylamine. In connection with these studies it was observed that the solubility of the metal was much less

in purified methylamine than was reported by previous investigators.

(5) The conductance of alkali metals in methylamine. Our preliminary conductance measurements of potassium in methylamine are much lower than those previously reported. Thus, it is believed that perhaps earlier data may have been influenced by the presence of ammonia in the solvent. The low conductance values obtained for potassium as well as extremely low values for lithium show that the conduction process in methylamine is different from that in ammonia. Application of Stoke's Law to earlier data in ammonia and methylamine in connection with the temperature coefficient of conductance gives further evidence for this finding, indicating a conduction process in methylamine which corresponds to the viscous flow whereas a different process is followed in liquid ammonia. Other correlations of theoretical interest regarding the nature of these metal solutions are presented.

(6) An improved control system for low temperature thermostating. A large volume cryostat has been designed and constructed which will maintain a given temperature $\pm 0.003^\circ\text{C}$ throughout the temperature range of -20°C to -70°C and will return to this same equilibrium temperature after being allowed to warm up.

100 pages. \$1.25. MicA54-1926

A KINETIC APPROACH TO THE THEORY OF LONG CHAIN MOLECULES

(Publication No. 8666)

Frank Chauncey Goodrich, Ph. D.
Columbia University, 1952

A study has been made of the kinetic behavior of linear macromolecules based upon the postulates of classical dynamics rather than upon the usual statistical thermodynamic method. It is shown that the origin of the restoring force observed in an extended linear macromolecule is in the centrifugal Brownian motions of the statistical segments of the chain. At low separations of the ends of the chain, the kinetic method reproduces the result of the thermodynamic method in that the restoring force is shown to be proportional both to the magnitude of the separation and to the absolute temperature. At larger separations, the restoring force is qualitatively similar but quantitatively different from that found in the statistical thermodynamic method, the difference probably being the result of the different approximations used in each case.

An attempt has also been made to correlate the Brownian motion of neighboring statistical segments, but no complete solution has been found. It is shown, however, that such a correlation must satisfy two conditions derived from statistical mechanics. A correlation function which decays exponentially with distance along the chain is shown to be satisfactory, but there may be other types of correlation which satisfy the given conditions.

A further study treats some of the problems of segmental diffusion in linear macromolecules, and complete solutions to the Smoluchowski equation are given under varying boundary conditions. The results, however, are not in better agreement with experiment than those derived from the approximate solutions to Smoluchowski's equation which have already appeared in the literature.

88 pages. \$1.10. MicA54-1927

A CELLULAR METHOD APPLIED TO CARBON COMPOUNDS

(Publication No. 8720)

Ernst Moshe Loebl, Ph. D.
Columbia University, 1952

The cellular method, as originally developed for solids, is applied to a problem in molecular structure, namely the carbon-carbon bond.

The Schroedinger equation is solved inside a tetrahedral cell subject to boundary conditions arising out of the symmetry of the problem and the desired continuity of the wave functions and their derivatives.

The wave function is chosen as a linear combination of atomic s- and p- wave functions; these are obtained by means of a numerical integration based on a Hartree type potential field. From the condition of consistency of the equations defining the boundary conditions potential energy curves are derived; these lead to values for the binding energy, the bond distance, the vibrational force constant and the amount of hybridization of the wave functions.

The binding energy as obtained directly is too large; this is due to the neglect of the interelectronic repulsion of the two electrons with opposite spin in the bond orbitals. If this correlation effect is taken into account by means of a very simple electrostatic correction term, the energy agrees within 0.5% with the experimental value. The computed bond length is 81% of the experimentally observed one. The wave functions leading to strongest binding turn out to be sp^3 hybrids. The agreement between the computed and observed vibrational force constant is bad.

The boundary conditions can also be adapted so as to lead to a molecular orbital approach. From this, potential energy surfaces are obtained which show the stability of the regular tetrahedral configuration towards deformations.

86 pages. \$1.08. MicA54-1928

COMPRESSIBILITY FACTOR DETERMINATIONS FOR BINARY GAS MIXTURES CONTAINING SMALL PERCENTS OF ONE COMPONENT

(Publication No. 8590)

William S. Wartel, Ph. D.

University of Pennsylvania, 1954

Supervisor: Dr. John G. Miller

The Burnett experiment for determining the compressibilities of gases has been applied for the first time to binary gas mixtures containing small percents of one component. Carbon dioxide-water vapor and helium-water vapor mixtures, with water vapor as the dilute component, were investigated. Procedures were developed for the preparation of mixtures containing varying amounts of water vapor and for the analysis of the water vapor following both the high and low pressure expansions.

The following information was obtained concerning the Burnett apparatus: (1) the gauge factor, used to convert the piston gauge reading to the pressure, as well as the volume-ratio of the two chambers of the compressibility bomb remained constant over the pressure range investigated; (2) adsorption effects within the bomb were negligible at 30°C; (3) sufficient precautions were taken to prevent unmixing of the components of the gas mixture during an expansion; and, (4) the ice-point vapor pressure of carbon dioxide, used in the gauge calibration, was determined and good agreement was obtained with the value reported by Bridgeman.

The compressibility factor was determined at 30°C for dry helium and carbon dioxide and the mixtures containing water vapor. The effect of small amounts of water vapor on the compressibility factors of these dry gases was evaluated and in the case of carbon dioxide, the Burnett method proved to be sensitive to 0.04% water vapor. For both helium and carbon dioxide, interaction with small amounts of water vapor were detected by means of the Burnett technique at moderately high pressures, i.e., about 50 atmospheres for carbon dioxide and 115 atmospheres in the case of helium.

The Lennard-Jones and Cook equation was tested using the second virial coefficients calculated in this investigation and was found to fit the observed data within the limit of the experimental error of the water vapor analysis. This substantiates the conclusion that the interaction referred to above is of the dipole-induced dipole variety.

86 pages. \$1.08. MicA54-1929

THE ASSOCIATION OF N-H COMPOUNDS

(Publication No. 8591)

Norman E. White, Ph. D.

University of Pennsylvania, 1954

Supervisor: Dr. Martin Kilpatrick

The H-bond association of 10 compounds containing nitrogen, each of a different class, selected

from the literature on the basis of their known associated behavior, with only the N-H-N bond operative, has been redetermined by a precision cryoscopic method in benzene solutions for the range 0.006 to 0.1 molal. The compounds studied were: 2-n-butylbenzimidazole, benzotriazole, NN'-diphenylformamidine, 3,5-dimethylpyrazole, NN'-diphenylguanidine, cyanamide, diazoaminobenzene, benzaldehydephenylhydrazone, N-phenyl-N'-p-tolylacetamidine, and aniline. Triphenylmethane and azobenzene were employed as standard substances with which to calibrate the apparatus and to evaluate the molal freezing point constant of benzene; the latter was found to be 5.114° at infinite dilution.

The technique and apparatus used for the measurement of ΔT_f was essentially that described originally by C. A. Kraus and co-workers. The concentration of the same solution was determined by measuring its density with a newly designed magnetically-operated metal float of about 10 ml volume which could detect a change of 3 density units in the 7th place. The overall estimated uncertainty of the association factor, f , which is the ratio of the experimental molecular weight of the associated solute to its formula molecular weight, averaged about 0.9% at 0.01 molal, with improvement at the higher concentrations being only 0.3% at 0.05 molal.

It has been found possible to describe the association of nine of the above compounds, of which the first six are highly associated, in terms of equilibrium constants, one or more as required (aniline appeared to form solid solutions instead). To do this, the procedures made use of were those of E. N. Lassetre [J. Am. Chem. Soc. 59, 1383 (1937)]; of H. Dunken and co-workers [Z. physik. Chem. 45B, 201 (1939-40); 46B, 287 (1940)]; and of Jannik Bjerrum [Kem. Maanedssblad 24, 21 (1943)], the latter being expanded somewhat by adopting a procedure originally used by S. Fronaeus and represented by Sullivan & Hindman [J. Am. Chem. Soc. 74, 6091 (1952)]. The Lassetre procedure was found to be applicable in five cases wherein continuous association with polymers of all orders was indicated. The more varied Dunken procedure was applicable in all cases though with difficulty where the degree of association was small. The Bjerrum-Fronaeus procedure, though applicable also in every case where the degree of association was sufficiently large, was used in only six cases where it was of greatest value. Wherever the three procedures coincided in applicability, they resulted in the same association equilibrium constants within the error of determining them. Four of the compounds exhibited only limited association: NN'-diphenylformamidine and diazoaminobenzene to dimers only, NN'-diphenylguanidine and 3,5-dimethylpyrazole to a mixture of dimers and trimers; the remainder gave continuous association with polymers of all orders formed. The corresponding association constants had an estimated uncertainty of from 2 to 5% in the more favorable cases, and up to 50% in the worst cases.

It has been concluded that it is entirely possible to determine the appropriate equilibrium constant for presumably any case of association by using one

or the other of the above procedures. The applicability and relative merits of each procedure have been discussed briefly.

From the number and type of equilibrium constants found necessary to describe each association, some deductions about the structure of the polymers formed have been made, which structures generally confirm that expected from a consideration of the structure of the unit molecule; in doubtful cases, the two approaches are a necessary complement to one another.

By analyzing also in terms of association constants the available cryoscopic data in naphthalene for the

first four compounds above, it has been possible to calculate a rough value of ΔH for the N-H-N bond. In the most reliable case, the result was 6800 calories $\pm 20\%$, as a limiting value for the larger polymers. In one case, it was concluded that ΔH cannot properly be calculated at all since the compound appears to form polymers of different types at the two conditions, being cyclic in freezing benzene and linear in freezing naphthalene; differences in solute-solvent interactions for the two solvents, affecting especially the entropy factors, has been suggested as a possible alternative explanation, however.

503 pages. \$6.29. MicA54-1930

DOMESTIC SCIENCE

DISCREPANCIES BETWEEN BELIEFS OF LEADERS IN HOMEMAKING EDUCATION IN MICHIGAN AND PRACTICES IN LOCAL HOMEMAKING PROGRAMS

(Publication No. 8507)

Beatrice Olson O'Donnell, Ph. D.
Michigan State College, 1954

This study was based on the hypothesis that there were discrepancies between the beliefs of leaders in homemaking education in Michigan and the practices in local homemaking programs and that the nature and extent of the discrepancies between beliefs of leaders and practices could be determined and quantitatively described; that data about discrepancies would provide some specific indications of strengths and weaknesses of the program, and would have implications for program development at the local level and for teacher education including supervision.

Four areas of stated beliefs of leaders were drawn from federal and state bulletins relating to the development of vocational homemaking education at the secondary level. These beliefs were: (1) Homemaking education is a cooperative program in which the school and home work together (2) Homemaking education is an integral part of the total school program (3) The needs of local pupils are determined and the homemaking program is based on the recognized needs, interests and problems of adolescents and their families (4) In the homemaking program, the teaching-learning methods are those which contribute to the achievement of the goals of homemaking.

Local practices in relation to each area of belief were studied in a random group of twenty-three reimbursed vocational homemaking programs. Basic data were secured through field visits to the participating schools and through the use of three objective instruments. Certain supplementary materials were submitted by the participating schools. Data were secured from 1,169 pupils in sixty-four homemaking classes, 679 parents of pupils in homemaking classes in twenty-one of the participating schools, and homemaking teachers and school administrators in the twenty-three schools.

Discrepancies between beliefs of leaders and practices in local programs were defined as the dif-

ference between the percentage of respondents who reported they had experienced a group of practices in local homemaking programs and the percentage of respondents who would have experienced the practices had the belief been fully implemented in the local programs. Four levels of discrepancies were defined. It was assumed that there was "little or no discrepancy" if seventy-four to one-hundred percent of the respondents consistently reported practices which were related to a belief; "some discrepancy" if forty-nine to seventy-five percent reported the practices; "considerable discrepancy" if twenty-four to fifty percent of the respondents reported the practices and "great discrepancy" if less than twenty-four percent of the respondents reported the practices.

The data which were secured from school administrators and homemaking teachers, pupils in homemaking classes and their parents generally supported the hypothesis of the study. Discrepancies between the four major areas of stated beliefs of leaders and practices were found for the total sample and for individual schools. The extent of the discrepancies varied for the four beliefs.

There was "great discrepancy" between the beliefs of leaders and the practices in local programs in the area of home and school cooperation. There was "considerable discrepancy" between beliefs and practices in the area of determination of local needs and program planning based on needs of adolescents and their families. The findings were less conclusive with reference to the belief that homemaking education is an integral part of the total school program. There was "great discrepancy" between the beliefs and practices in the use of certain teaching-learning methods and "considerable discrepancy" in the use of other methods.

The study had certain limitations. Not all areas of beliefs of leaders were included. The sample did not adequately represent all types of vocational homemaking programs in Michigan, but represented fairly well local programs which offered a basic two year homemaking program with one year of Homemaking III.

Item analysis of responses was made through the use of the Fattu nomograph chart. The analyses indicated that (1) there were significant differences in the responses of homemaking teachers and school

administrators relative to the homemaking and the total school program; (2) there was general agreement between the responses of homemaking teachers and pupils; (3) the instruments contained a fair per-

centage of items which discriminated between beginning and advanced homemaking classes; and (4) the instruments discriminated between individual schools. 412 pages. \$5.15. MicA54-1932

ECONOMICS

ECONOMICS, GENERAL

PROBLEMS OF NATIONAL INCOME
MEASUREMENT IN UNDER-DEVELOPED
COUNTRIES WITH SPECIAL REFERENCE
TO THE PHILIPPINES

(Publication No. 8594)

William Israel Abraham, Ph. D.
Columbia University, 1953

The compilation of national income estimates for under-developed countries poses special problems. These problems arise primarily out of the predominant importance of agriculture and the rural way of life, the wide range of economic activities carried on outside commercial channels, and the concentration of many kinds of production and trade in small establishments or even in the home, to name only the most important. Since national income estimates were developed for use in the more highly industrialized countries, the techniques and concepts that have gradually evolved are directed mainly at measuring and recording the kinds of activities typical of such countries. Not much attention has been given in the literature to the particular difficulties encountered by countries in the earlier stages of economic development which undertake programs of national income research.

After examining in broad terms the characteristic differences between the developed and under-developed economies, the basic issues in the definition and measurement of national product in under-developed countries are examined at some length. Certain principles are put forward for determining what part of production should be included, how certain types of subsistence output should be valued, what departures from conventional classifications of income are required as a result of the simpler type of structure and the kinds of statistical data generally available, etc.

Following this discussion of concepts and methodology, the advantages of a national accounting approach are explained and a system of accounts appropriate for use by under-developed countries is drawn up. The distinctive features of these accounts are explained and justified, and all the accounting flows are defined in detail. Special attention is paid to the treatment of defense production, capital formation, international donations, etc., because of the absence of widely accepted conventions or because of cogent reasons for departing from the customary treatment.

To demonstrate the feasibility of applying the model accounts to an under-developed country and to indicate how the items entering into the accounts can be measured in practice, estimates for the Philippines in the form of the accounting structure advocated are presented. These estimates, covering the years 1946 through 1951, were prepared by the author during a six months' stay in that country in the capacity of adviser to the government in the field of national income under the United Nations Technical Assistance Program. In order to convey to users of the statistics some impression of the relative accuracy of the component items, a table is included which shows reliability ratings that have been assigned to all the entries in the accounts and in the table showing the industrial composition of the national income. The body of national income statistics presented has been adopted by the Central Bank of the Philippines as official, and the Bank plans to continue to publish comparable estimates at regular intervals. In order to indicate the nature of some of the problems obstructing the development of statistics in general, and national income statistics in particular, in the Philippines, various recommendations made by the author to the Government are reproduced in an appendix. 143 pages. \$1.79. MicA54-1933

THE DEMOGRAPHIC FACTOR - AN OBSTACLE
TO ECONOMIC DEVELOPMENT WITH
SPECIAL REFERENCE TO JAPAN
(Publication No. 8694)

Salomon Sioma Jacques Kagan, Ph. D.
Columbia University, 1954

Economic development is part of the process of cultural change. The problem thus calls for an interdisciplinary approach.

To evaluate the role of any single factor in economic development is not easy for it is affected by a large number of variables including many imponderables. What makes the case of the demographic variable especially difficult is that it has two degrees of freedom - mortality and fertility, each of which interacts with economic development in a different dynamic sequence. The lag in reaction of fertility as compared with mortality accounts for the demographic explosion in the wake of economic development.

An approach to the issue on a global "one-trough" basis would be unrealistic for the world is not "One World", either politically or in any other significant

respect. The unit of analysis must therefore be a nation state.

We have selected Japan as unit of analysis for several reasons. First, Japan is the only country outside the Western civilization which achieved for over a half a century an impressive record of sustained economic progress. Secondly, her vital transition followed closely that of the West in spite of her ruling oligarchy's direct opposition to all measures of fertility control. Thirdly, due to poverty in natural endowment, the structural transformation of her economy imposed an increasing dependence on foreign trade. Fourthly, Japan's rate of capital formation has been consistently among the highest achieved anywhere. Lastly, in naming the principal reasons only, Japan's Government played a preeminent role in the country's industrialization.

It may therefore seem the more surprising to find that no progress in standard of living has taken place in Japan during the last quarter of a century.

Japan's abortive economic development can be accounted for in terms of the demographic factor alone. Our two major propositions read as follows -

- 1) Over-population acts as a drag upon productivity not only in agriculture, but in the secondary and tertiary sectors as well;
- 2) There is an irreconcilable conflict between the rate of growth of Japan's economy as dictated by the growth of her population and the expansion of the world's trade in general and the demand for Japan's exports in particular.

Japan's tragic plight of today is merely a recurrence of what had already happened at the outset of the great depression at the end of the 20's. The imperialist solution, while it lasted, was successful in providing employment opportunities at rising levels of productivity for all entrants into Japan's labor force.

In venturing a forecast we select a time horizon of fifteen years hence. The reason is that up to 1970 the size of Japan's labor force is already determined and could not be decreased even by the most successful policy of family planning. Our forecast is that there will be no improvement in the average standard of living of the Japanese up to 1970 and that even the present standards could be maintained only by American aid in some form or another.

Nor could Japan hope to improve its economic position by joining the Soviet bloc for the outcome would be equalization of her standard of living downward to the Chinese level, as was the case of Czechoslovakia with respect to the U. S. S. R.

Japan's predicament is the outcome of her deliberately selective acculturation - she absorbed only those features of Western civilization which would contribute to buttressing her national power while rejecting the Western pattern of values, in particular the objective of individual welfare. The price may be a relapse into "natural" population control by mortality instead of the rejected rational solution by controlled fertility. 401 pages. \$5.01. MicA54-1934

THE IMPACT OF UNIONS ON LABOR MOBILITY

(Publication No. 8728)

Howard Drake Marshall, Ph. D.
Columbia University, 1954

The first two chapters of this study define the various types of mobility and the scope of the study, and call attention to the uncertainties surrounding the problem of mobility. While recognizing the general agreement on certain basic relationships such as the turnover of males vs. females and the correlation between home ownership and low rates of mobility, the writer directs attention to the many unanswered questions such as: How attached are workers to a particular job? How important are the effects of government activities on mobility? Despite these uncertainties the writer attempts to draw certain conclusions about the importance of unions in reducing mobility. To do so, an examination is made of the various actions currently undertaken by unions which are frequently cited as reducing mobility. Included in this study is an appraisal of welfare provisions such as pensions, health plans, and paid vacations, seniority and worksharing and changes in wage structures. Other chapters are devoted to the question of the role of unions in creating good plant atmosphere, their role in controlling the dismissal practices of employers and the utilization of various restrictive practices.

To verify the written material, a study was made in a community of about 40,000 checking on the opinion of union and management officials as to the importance of unions in reducing turnover. Management officials were also questioned as to what actions of their own they deemed most important in reducing turnover. To supplement the replies of these first two groups, interviews were held with 118 union members as to the causes of their mobility or immobility.

The study concludes that the impact of unions upon mobility is small but that it is likely to grow increasingly important. The most important factor found is the development of seniority systems which unions have applied not only to layoffs but to promotions and a host of minor considerations. Fringe benefits, on the other hand, are found to be less important than is sometimes believed. This is true because they have become so widespread and because unions have pressed for industry-wide and area-wide plans. Unions are found to have fought strenuously to reduce all types of wage differentials, but their effect on other than percentage differentials is found negligible and a question is raised as to the significance of this with respect to mobility. Attention is called to the fact that restrictive practices by unions have declined through the years. This decline is partly accounted for by the pressure from public opinion and legislative enactment and partly from the growth of industrial unionism.

Attention is also given to the ways in which unions may increase mobility. Foremost among these are the demands for severance pay and the providing of job information through the union journal and referral service.

Despite such facilities as those mentioned above, it is deemed likely that any increase in mobility resulting therefrom is likely to be even less significant than the reductions in mobility from other actions. As to the future the problem is less the reduction in mobility than making mobility purposeful and well directed.

302 pages. \$3.78. MicA54-1935

**THE ESTIMATION OF MONTHLY
LABOR FORCE, EMPLOYMENT, AND
UNEMPLOYMENT DATA FOR STATES**

(Publication No. 8735)

Kenneth Allan Middleton, Ph. D.
Columbia University, 1954

The study is a description and critical analysis of methods, data, and underlying concepts whereby monthly estimates of labor force and its subdivisions of employment and unemployment, primarily from existing sources, may be based, by states, both currently and historically for a period not preceding 1940. It is based primarily on the writer's experience in preparing such estimates for several states. A survey by mail showed that similar estimates, other than those provided by the decennial census, have been or are being prepared for about half the decennial census, have been or are being prepared for about half the states. Such data have proved useful in several ways specified in the study.

Estimates are profoundly influenced by underlying definitions and by procedure in the collection of data. The estimator will of necessity be largely guided by the Census Bureau's labor force concept. This approach was developed during the nineteen-thirties, when deficiencies in the older concepts and in the available data were sharply revealed. Differences in underlying purpose and in methods of collection continue to result in disagreements as to the size of labor force categories. A tabulation of the effect of different aims and assumptions on the classification of twenty specified population groups reveals the possible flexibility of concept.

The estimating procedure involves (1) decision as to age, sex, industry, or other classifications required; (2) establishment of consistently-defined and authoritative levels at one or more bench mark dates; and (3) selection of statistical series to portray month-to-month movement in the chosen classifications. Various specified devices are available to bring the month-to-month sources of data into agreement with one another and more especially with the established bench marks.

For employment, the decennial census data are best usable only after certain specified adjustments and even then are subject to substantial likelihood of error, for which direction and degree are suggested for various major categories. Nonagricultural hired employment tends to be most accurately measured and to provide the most plentiful monthly statistical

data. Agricultural employment is much less accurately measured, with large discrepancies appearing in alternative sources of data, yielding series subject to admitted inaccuracies. Nonagricultural self-employed may be estimated with the aid of data on numbers of firms and on certain hired groups; unpaid family workers may be assumed to fluctuate within a state analogously to their national relative importance, and a somewhat similar assumption may be made the basis of estimates of domestic servants.

Unemployment, in which decennial census figures are particularly subject to error, should no longer be estimated as a residual but should be directly ascertained with the aid of unemployment insurance data, supplemented by specified assumptions as to the rates of unemployment in non-covered, nonagricultural industries and their relation to that in the covered ones, by suggested patterns of analysis as to agricultural unemployment based on the limited statistical sources in that area, and by special assumptions and procedures designed to produce an estimate of new job-seekers.

Observed differences between the state labor force participation rate or unemployment rate and corresponding national measures may be explainable on the basis of economic and demographic differences among states; or, on the other hand, re-examination of statistical sources and procedures may be indicated. Sharp fluctuations, if any, provide a further test of the plausibility of the estimates and their correspondence to the desired definitions through efforts to link them with known events producing such fluctuations.

The four appendices include a method of estimating a state's non-institutional population age fourteen and over, month by month, and an application of Kendall's method of rank correlation to testing for the presence of a shift in seasonal pattern.

369 pages. \$4.61. MicA54-1936

**COMMON STOCK AS A
LIFE INSURANCE INVESTMENT**

(Publication No. 8265)

Frank Joseph Sabella, Ph. D.
University of Pennsylvania, 1949

Supervisor: Professor G. Wright Hoffman

The Problem. - Life insurance companies have never invested in common stocks to any substantial extent. Common stock has, at various times, been suggested as a suitable outlet for the investment of life insurance funds. This study is an investigation into the question of whether or not common stocks would be suitable investments for life insurance companies.

The Case Against Common Stock. - The following are the principal arguments against common stocks for life insurance companies.

The market prices of common stocks are subject to great fluctuations.

Such investments by life companies would raise the question of concentration of economic power.

Income on common stocks is irregular.

Since life company obligations are in fixed dollar amounts fixed dollar investments are better suited to insurance investment than equities.

The Armstrong Committee, after a comprehensive investigation, ruled against common stocks.

The problem of when to buy stocks is difficult.

Common stockholders are not in as good a position as bondholders in the event of a corporation's failure.

The Case For Common Stocks. - The following are the principal arguments advanced in favor of investment in common stock by life insurance companies.

Common stocks yield a substantially higher income than the traditional investment media of life companies.

Common stock investments would improve the quality of life company portfolios.

Certain other institutional investors have invested successfully in common stocks.

Common stock investments would allow portfolios better to meet the basic requirements of life insurance investments.

Such investment by life companies would make for greater economic prosperity.

General Conclusions. - Investment in common stocks by life insurance companies presents several important difficulties and several important advantages. However, the available evidence, on balance, indicates that the advantages are substantially stronger than the disadvantages. There are several valid objections but none are so formidable that they cannot be adequately met by proper action on the part of legislators, supervisory authorities, and life company managements. Life insurance companies should invest in common stocks. State laws, especially those of New York, should be amended so as to permit substantial investments of life insurance funds in common stocks. Such investments can provide a larger return and thus furnish insurance to policyholders at lower cost without undermining the foundations of safety upon which the institution of life insurance is built and, at the same time, would make for a more stable and prosperous economy. The rule of salus populi supremema lex esto should be followed.

288 pages. \$3.53. MicA54-1937

DEVELOPMENT OF AND EXPERIENCE WITH INDUSTRIAL GRIEVANCE PROCEDURE, WITH REFERENCE TO THE OPEN-END AND CLOSED-END TYPES

(Publication No. 8911)

Walter Alfred Schratz, Ph. D.
University of Pittsburgh, 1954

This is a study of the recent development of and experience with grievance procedures. With the rapid growth of collective agreements in the 1930's methods were devised which brought effective disposition of many of the daily annoyances of workers. The general method of solution was first devised over a hundred years ago; we now call it grievance procedure. This machinery is implemented by the "Shop Steward" on labor's side.

Early employer methods of handling grievances in large-scale American industry included the "Open Door Policy"; the Personnel Administration method; and Employee Representation plans including the Shop Committee. Their limitations and partial success are reviewed.

A significant measure of how well a union and an employer have been getting along is the frequency and severity of grievances, including appeals to arbitrators or impartial umpires. The significance of the number, kind, and levels of settlement of grievances lies in the nature of the grievance procedure, in its simplicity, and the faith placed in it as a means of settling differences by both labor and management.

Effort is made to illustrate the growth and effectiveness of the shop steward system as employed by the Westinghouse Electric Corporation and the United States Steel Corporation. A detailed review of past practices and policies is presented, and attempt is made to see how their systems currently agree with criteria set up to judge potentially effective procedure and the significance of each level of settlement.

The grievance procedure is debatable at both the first and last step. It begins when the worker takes his complaint to his steward, and the steward takes the grievance to the foreman who has a specified number of days in which to give his answer. If settlement fails, the grievance goes to the second level where the chief steward of the union and the general foreman or superintendent or other representative of line management confer and attempt a settlement. If agreement fails here the grievance goes to step three where the manager of industrial relations confers with the grievance committee. If no settlement is agreed upon, the grievance is referred to the national or international level, which constitutes step four. Should the parties fail to settle at the fourth step they may consider arbitration in the fifth and final step.

Voluntary arbitration or mutual consent to arbitrate is practiced by the Westinghouse Electric Corporation. The parties are not compelled to submit their dispute to arbitration; this is sometimes referred to as voluntary submission of the dispute with

compulsory acceptance of the award, or "open end" method. When both sides agree to the last step with grievance settlement handled automatically by an umpire, this is known as a "closed end" type agreement, as practiced by the United States Steel Corporation.

The findings are classified into tables showing total numbers of grievances by topic, level of settlement, and frequency. The grievance machinery at both companies is not operating according to established criteria. This may be attributed partly to lack of training of foremen and stewards, and to union insecurity. Other reasons are given for each firm.

One of the most effective means for the prevention of grievances is to make an analysis of their sources. Interpretative use of statistics for a given period will generally tell the story. The tabulation provides a yardstick to guide management and unions in establishing a preventive program.

The study reports on ways in which labor and management have learned to make this machinery work in great corporations that deal with large unions. Most important, perhaps, is the emphasis on the spirit in which grievance adjustment must be undertaken if constructive results are to be achieved.

236 pages. \$2.95. MicA54-1938

ECONOMICS, COMMERCE — BUSINESS

THE ROLE OF ACCOUNTING IN PRICING

(Publication No. 8700)

Maybelle Kohl, Ph. D.
Columbia University, 1954

In learning how, if at all, accounting has been, is, and can be used in pricing decisions, this study is limited to privately owned manufacturing enterprises. Both research readings and empirical evidence from forty firms located in northern Illinois, southern Wisconsin, and the New York City vicinity and chosen because of their nationally known products, longevity, or size provided the basic data. Forty personal interviews with price makers or representatives well informed on their companies' pricing practices were made neither to affirm nor to deny but rather to supplement research readings.

Three chapters are devoted to the role of accounting in reference to the principal pricing factors of cost, demand, and competition. This inquiry relates to the types of costs pricers require; to the accounting aids available for producing either total costs or practical forms of marginal costs on an actual, a present, a current replacement, or a future replacement cost basis; and to the control of costs to implement pricing decisions.

Because the relative importance of cost, demand, and competition is sometimes modified by such

factors as personalities, precedent, prestige, and legislation, two chapters relate to the worth of accounts in pricing when "other pricing factors" or government influences are present. The Robinson-Patman Act and the sales-below-cost laws of thirty states, enacted with the intention of influencing price, expressly refer to a cost-price relationship; and the phase of pricing to which this study is directed calls for reference to the accounting aspects therefor.

The results of personal interviews, relative to the preceding subject matter, with representatives of forty firms falling under twenty classifications of manufacturing industries designated in the United States government's Standard Industrial Classification Manual are recorded in two chapters. One chapter is a summary and analysis of the interviews and is supported by a second chapter which reports pricing descriptions in order to demonstrate the use of accounts in a manner not possible in the general analysis. In gathering these data, an endeavor was made to learn at firsthand how pricing executives view the use of accounts in pricing decisions.

Several pricing plans which appeared preferable to others and a proposed pricing plan are described in a chapter preceding that of the summary and conclusions which are:

1. Accounts are operative where cost, demand, and competition are active pricing factors. The use of accounts does not depend upon a cost-price relation: In so far as cost does have an effect on price, a costing system is of value in supplying data or basic relationships for pricing estimates. In so far as market conditions are of importance, accounts can be utilized to prepare data for demand forecasts, to form estimates on price elasticities of demand, to supply facts for use in quasi-marginal cost pricing, and to provide means for cost control.
2. Accounts are not relegated to an inactive status when "other pricing factors" such as prestige and precedent predominate; they can be both advantageously used and illegally misused. Statutory influences on accounting in respect to pricing have not been significant. When legislation relating to pricing is enacted, accounts do not have a more important role than ordinarily, but they have a different role in justifying a price to public authorities. There is no evidence to show that special use of accounts has developed for cost justification of price differentials or of price minimums.
3. Accounts are basic to the structure of the compromise price, the equation of which is (total product cost + net profit) - (adjustment for competition) = price. This equation represents the pricing practice of 68 per cent of the firms interviewed for this study while an additional 10 per cent use the equation without modification for competition. Research readings have shown the preceding practices to be more used than that where a competitively fixed price is the starting point and the equation is price - cost = net profit.
4. Total product costs are more often known, are understood better, and are more frequently requested by pricers than are marginal costs. However,

accountants have four methods of producing data for quasi-marginal cost pricing.

5. Current replacement costs are desired by those who price. At times, future replacement costs are placed in pricing estimates. Depreciation is ordinarily computed in terms of actual fixed-asset cost.

6. A general expression of those interviewed for this study was that accounting information supplements, guides, and cautions management and that the accountant as the custodian of the truthfulness and usefulness of accounts has the safekeeping of the integrity and significance of the figures recorded therein.

335 pages. \$4.19. MicA54-1939

**ENERGY MARKET OF PACIFIC NORTHWEST:
A REGIONAL ANALYSIS OF SUPPLY,
UTILIZATION, AND COST OF ENERGY**

(Publication No. 8352)

Endel Jakob Kolde, D. B. A.
University of Washington, 1954

The purpose of the study is fivefold: (1) to show possible impact of energy utilization on economic growth, (2) to establish sources and uses of energy in the Pacific Northwest, (3) to appraise the energy industries of the Region, (4) to determine the cost of energy in the Region, and (5) to project future requirements and evaluate the outlook for energy supply of the area.

The report contains information and data gathered through field work which were not available prior to the conclusion of this project. Quantitative data presented are compared and contrasted with established norms for facilitating interpretation. This thesis represents a novel approach to studying energy economy. The concept of energy is visualized in its economic entirety instead of following traditional methods of treating each energy commodity and/or industry as an isolated entity, while in fact they are substitutive both in source and in use.

The study consists of fourteen chapters. Chapter 1 deals with purpose, scope, and methodology of the project. In Chapter 2 the Region is defined, and described geographically and economically. Chapter 3 is devoted to the nature, manifestations, and significance of energy. Relationship between energy utilization and economic advancement is viewed from a historic perspective.

In Chapter 4 the coal industry of the Pacific Northwest is analyzed. It includes data on coal deposits, development of coal mining, production cost and organization, and consumption of coal by uses as well as by states in the Region. Chapter 5 deals with electric power. It covers the Region's hydraulic potential and its natural characteristics, generating capacity and power production, relationships between capacity and output in a hydroelectric system, hydraulic factors bearing on output capabilities, upstream storage, and alternatives to water storage reservoirs. Electric power demand is shown together with per

capita rates, demand composition by use, and consumption trends since 1940. Petroleum is discussed in Chapter 6. Data are shown for sources of supply, consumption trends, demand composition, and per capita rates. Demand is broken down into fuel oil, motor fuel, and kerosene. Supply and demand conditions of gas are analyzed in Chapter 7, which contains data and shows trends relevant to this industry.

In Chapter 8 the findings of preceding chapters are combined so as to reveal the magnitude and constituents of the energy market in the Region and to determine the significance of different energy sources in the regional economy. Alternative methods of converting different energy commodities into a comparable unit of measurement are evaluated, and the volumes of potential and of effectively utilized energy determined. Also, the rates of consumption, and the ratios of imported energy to regional production are discussed.

Chapter 9 shows the cost of energy by type of energy commodity and by major market centers of the Region. These data are expressed per conventional marketing units and per unit of energy. A formula is shown for inter-fuel cost comparisons and comparative costs of competitive fuels are shown. Cost trends are indicated by indexes.

In Chapter 10 the demand projections are shown for primary energy commodities and for total energy demand. Methods and considerations of energy forecasting are discussed. Chapters 11 and 12 are devoted to problems bearing upon supply outlook for energy in the Region. Emphasis is placed on coal and electric power which utilize Pacific Northwest resources. Chapter 13 comprises an appraisal of the outlook for atomic energy. In Chapter 14 findings are summarized and the synthesis of the study stated.

295 pages. \$3.69. MicA54-1940

**A SURVEY OF THE SALES TRAINING
PRACTICES OF REPRESENTATIVE
MANUFACTURERS OF INDUSTRIAL GOODS**

(Publication No. 7939)

Kenneth Lawyer, Ph. D.
University of Pittsburgh, 1954

Sales training methods of manufacturers of four classes of industrial goods (excepting raw materials) were studied as to: (1) the extent to which selection and training are coordinated, (2) the relative achievement required in each subject-matter area, and (3) the teaching methods employed by areas for each class of goods.

The classification of industrial goods selected was Copeland's. A multiple-choice questionnaire was constructed and mailed; and a sample of 258 firms was selected from the responses, representing each class of goods and five size groups (Thomas's Register).

With reference to hiring practices, three possibilities were listed as to testing devices employed, and

six as to experience and educational background. Areas of subject matter were classified as follows: Knowledge of firm, product, customer, competition, selling, engineering, and business economics. Six factors affecting training needs (expanding Tosdal's) and seven locations for learning were listed.

Opinions were obtained from a "panel of experts" as to the minimum achievement required in each area of subject matter for typical salesmen of each class. A similar panel of experts provided conclusions as to best site or environment for learning in each area. Conclusions and recommendations were based on comparison and evaluation of the practices as shown by tabulation with these previously developed authoritative opinions.

Selection as Representing Recognition of Training Need. Methods of selection employed by manufacturers of industrial goods in the employment of salesmen seem, from a technical viewpoint, to be unsystematic. A very small proportion of the employers questioned have an organized approach to this problem.

The demand for engineering graduates appears to vary directly with the complexity of the product and its market. In many cases, men with liberal arts or business education can readily be trained in the technical essentials of industrial selling.

The plant or office is an excellent testing ground for sales trainees, but it is at its best when men trained there have been carefully selected for eventual assignment as salesmen. Thus an adequate reservoir of qualified men is available.

Subject-Matter Emphasis and Time Spent on Each Topic. Major emphasis in all industrial training is on product knowledge, with knowledge of customer needs ranking second in most classes. There is increasing interest in salesmanship and in business economics.

At least two variables exist which are significant: (1) the degree of formalization developed in different firms' training programs as reported, and (2) the range within each class of goods as to the possession of significant product characteristics.

Tosdal's approach to the determination of training needs and Copeland's classification are based on characteristics sufficiently similar that sales training practices of a class may be justified by their common possession of such characteristics.

The Learning Environment - Plant and Office Training. Although deliberate planning or timing of the trainee's experiences appears to have been limited, respondents' assignments of trainees to plant or office experience indicate that in cases where certain topics must be covered, suitable ways have been devised.

Care and attention given the individual is in some instances remarkable. More often, however, typical needs rather than personal needs are determinants of the nature and extent of the trainee's plant or office experiences. Such training seldom is well supervised or coordinated.

The best programs have been developed by the larger concerns, where sizeable groups permit formalization of the program, and where testing is

more often used to determine individual needs. It would seem that the same principles could be applied by smaller concerns.

249 pages. \$3.11. MicA54-1941

COMPETITION IN COMMERCIAL PRINTING

(Publication No. 8710)

Robert Lekachman, Ph. D.
Columbia University, 1954

This study of the commercial printing industry during the years 1920-1950 centers upon investment in fixed equipment. It analyses the motivations of investors, the influences which bear upon investment, and the cyclical fluctuation of machinery purchases. Since a complete understanding of investment phenomena requires study of a wider range of entrepreneurial activity, this essay includes also a discussion of competition by process, service, and price, and a survey of efforts to control this competitive environment.

A number of conclusions have been reached. The mid-west has during the last thirty years acquired most of the periodical printing at one time concentrated in the east, especially in New York City. Yet, that city has maintained its share of commercial printing mostly because advertising and utility printing increased in importance. During the 1920's and the 1930's photo-offset lithography secured a growing portion of the printing market, but at the end of our period letterpress remained the most widely used process and more and more printers combined in the same establishment the two rivals. Specialization by product and process has increased only slowly during these three decades. The weight of the evidence suggests that large, specialized firms are no more profitable than less specialized rivals of smaller size.

We found that most investment purchases have been small, and that most printers are conservative in their attitudes toward the choice of equipment, preferring the old to the new. Their tendency to avoid routine procedures in investment derives partly from the extreme infrequency with which investment purchases are made. Printers buy machines because their competitors buy them, because they want to reduce their costs, because their equipment has "worn out", because they desire to expand, or because the price of labor has risen. Only rarely do they invest in anticipation of changes in the level of their sales. In everything that they do, their cash position is crucial both as regards the timing and the amount of purchases. In general, printing investment takes place as an adjustment to competitive pressures. Over the business cycle, printing investment either coincides with or slightly leads, as in the case of linotype sales, general business activity.

All attempts to control competition have failed. Trade unions and employers briefly combined after the first World War to raise wages, cut hours, and

extend unionization to non-unionized areas. The effort broke down in the face of the brief but sharp recession of 1921. Commercial printers, working through their trade association, next tried to standardize price by the use of price lists. Any hope of success was thwarted by a Federal Trade Commission cease and desist order issued in 1924. Efforts to standardize prices by standardizing cost procedures broke down during the 1929-1933 depression. Enormous diversity within the Graphic Arts and ill-conceived enforcement procedures rendered ineffective the NRA Graphic Arts Code. Commercial printing has been incurably competitive, but not especially efficient.

217 pages. \$2.71. MicA54-1942

ECONOMICS, FINANCE

INCOME TAXATION IN THE FEDERAL STATE: A STUDY OF JURISDICTIONAL CONFLICT

(Publication No. 8629)

Alpha Chung-i Chiang, Ph. D.
Columbia University, 1954

In a Federal State, the relationship between the federal and state levels of authority is one of coordination rather than subordination. Each level is supreme in its own sphere of powers as prescribed in the Constitution. When the Constitution assigns a power to one level of authority, and does not deny it to the other, that power is said to be concurrent. An example is the power of income taxation in the Constitutions of Australia, Canada, and the United States. In the other Federal State - Switzerland - the federal authority has no constitutional power to levy the income tax, although in fact it has taxed incomes by virtue of temporary constitutional amendments or emergency decree powers.

When income tax is concurrently levied, each authority can theoretically exploit the tax without regard to the tax rates of the other. In fact, however, each authority has to take into consideration the rates imposed by the other in order to keep the combined tax burden from becoming destructive of incentives. Concurrent income taxation thus creates jurisdictional conflict by restricting the freedom of each level of authority to raise revenue by increasing its own income tax rates. The predicament is aggravated by the fact that concurrent income taxation means dual administrative cost and double compliance cost. The former tends to reduce the net yield of the tax to the taxing authorities, while the latter will increase the actual burden on the taxpayers.

Among the various devices which have been proposed or adopted to harmonize concurrent income taxation, the deductibility feature operates to reduce the rate restriction by limiting the tax base and

therefore reducing the combined tax burden, but it leaves intact dual administration. The supplementary rates scheme is purported to reduce compliance and administrative costs, but the rate restriction is not reduced. The sharing arrangement also cuts down administrative cost by eliminating dual administration, but politically it is much less acceptable to the states than the supplementary rates scheme. The crediting device tends to lessen combined tax burden and minimize interstate differentials without eliminating dual administration; the fact that it entails loss of revenue on the part of the authority granting the credit, unless it raises tax rates at the risk of encountering taxpayers' resistance, will serve to deter, if not prevent, its adoption. The separation of sources, on the other hand, can fundamentally solve the problem of income tax conflict by destroying the root thereof.

From the point of view of both administrative efficiency and national interest, the income tax should be assigned to the federal government exclusively, and the states would be compensated for their withdrawal from income taxation by the reallocation of some other tax bases in their favor. In spite of the compensation, strong opposition to federalization is still to be expected from the states. For this reason, federalization probably can only be effected at a time of national peril when circumstances dictate that the federal government be given a free hand in income taxation. In Australia and Canada, the income tax was federalized during the Second World War when the rate restriction of concurrent income taxation was impairing their war efforts, and it has remained federalized in those two countries after the War. In Switzerland, however, income tax was not federalized, for the Swiss federal tax on incomes does not even have a permanent constitutional status. Nevertheless, a trend has been evident in that country toward increasing federal power of income taxation.

The United States has hitherto adopted nothing other than the deductibility feature as a harmonization device. This fact, however, by no means affects the commendability of a federalized income tax from the standpoint of national interest. For federalization to be effected, on the other hand, we probably shall have to wait till a time of national emergency, such as during a major war, when considerations of national security will outweigh considerations of state rights.

382 pages. \$4.78. MicA54-1943

THE NEW YORK CITY HOUSING AUTHORITY: A STUDY IN PUBLIC CORPORATIONS

(Publication No. 8648)

Arnold Harold Diamond, Ph. D.
Columbia University, 1954

In order to provide housing for low-income families of New York City, the New York City Housing

Authority had, as of April 30, 1953, 80 permanent projects in operation, under or pending construction comprising 95,686 dwelling units pursuant to Federal, New York State and New York City-aided programs. Public housing for low-income families was upheld in New York in *Muller v. N.Y.C.H.A.* which held that slum clearance and low cost housing are public purposes. *Neufeld v. O'Dwyer* further ruled that families with incomes up to \$4500 per annum could be construed as families of low income.

N.Y.C.H.A.'s history illustrated the mechanics of a government instrumentality having various attributes of autonomy and yet through certain ties with the City Government was publicly accountable for its activities. On balance, N.Y.C.H.A. apparently was allowed to operate with an appreciable degree of independence, free from municipal government interference, although there were attempts at direct interference by the mayor's office and difficulties with Federal and State supervisory agencies concerned with the expenditures of public moneys. Because of its public instrumentality status the Authority is expected to observe standards that are not necessarily applicable to private corporations. Hence there is cause for concern when it adopts policies which appear to be an inappropriate use of public powers.

N.Y.C.H.A. appears not to have fully solved the problem of relocating site residents who in many cases were made worse off by public housing. Pursuant to its various programs the Authority established maximum income limits for tenant admission and continued occupancy, but no minimum income limits. Thus families on relief constituted about 10% of its tenants. Relating rents to family incomes the Authority adopted proportionate rent schedules, allowing for rent adjustments when the tenant's income changed. Inasmuch as the rents of low-income families were insufficient to pay the full housing costs, N.Y.C.H.A. received annual government cash subsidies, estimated at around \$129 per apartment per year over the eleven-year period 1941-51. To deal with families whose incomes exceeded the maximum limits for continued occupancy N.Y.C.H.A. constructed no-cash subsidy housing, evicted many such families or allowed them to remain in Authority dwellings. If the Authority had adopted policies in 1948, which were subsequently adopted in 1951, there might have been fewer evictions and less reason to undertake its no-cash subsidy program.

N.Y.C.H.A. properties are in varying degrees exempt from the New York City property tax although N.Y.C.H.A. makes payments in lieu of taxes in order to defray partially municipal government costs. The estimated value of this tax exemption subsidy for cash subsidy projects was around \$254 per apartment per year during 1940-51, causing an estimated loss of tax revenues of \$83,000,000. Since certain Authority tenants had incomes higher than many non-tenants, the raising of substitute City revenues tended to produce a regressive tax burden. N.Y.C.H.A. made payments in lieu of taxes based on (a) a percentage of rental income, (b) the assessed valuation at the date of loan contract, or (c) fixed amounts equal to the taxes at the date of acquisition.

To improve the quality of its bond issues N.Y.C.H.A. utilized such devices as a system of annual contributions, a prescribed allocation of project revenues, a special arrangements of bond maturities, municipal guarantees, and special reserve funds. It is estimated that the subsidy involved in the interest income tax exemption for Authority obligations was \$31 per apartment per year for cash subsidized projects. Analysis of Authority bond yields found them at about the same level as average municipal bond yields for Federally-aided projects, some 15 to 25% higher for City-aided projects and some 15% lower for State-aided projects. Comparison of Authority obligations with bonds issued by other public corporations in the New York City area indicated similar marketing experience; however, housing bonds with an irrevocable Federal subsidy sold at higher yields than comparable Federal Government bonds.

In 1950 the estimated average "full" rent for Authority cash subsidized projects was about \$78 per apartment per month (if tax exemption is measured by the difference between payments in lieu of taxes and taxes that might have been paid) or about \$56 per apartment per month (if tax exemption is measured by the difference of payments in lieu of taxes and taxes paid at the date of acquisition); the 1950 median rent in New York City was \$42.50 per month. Further reliance upon public housing might be reduced if such alternatives as new construction coupled with the filtering-down process, rehabilitation of existing sub-standard dwellings, and a rent subsidy prove feasible.

326 pages. \$4.08. MicA54-1944

FINANCING THE FEDERAL RECLAMATION PROGRAM, 1902 TO 1919: THE DEVELOPMENT OF REPAYMENT POLICY

(Publication No. 8683)

Peggy Heim, Ph. D.
Columbia University, 1953

This study attempts to analyze the factors influencing the development of repayment policy in the federal reclamation program for the period 1902 to 1919. When Congress passed the Reclamation Act in 1902, it established a ten year repayment principle. With this provision it hoped to impose the full cost of the irrigation facilities upon the water users rather than upon the government and to restrain future requests for additional construction. This study deals with the reasons Congress adopted the repayment principle, the early problems involved in the implementation of policy, the influence of political and economic forces on policy formation, and the ineffectiveness of the reimbursement principle in fulfilling the original objectives of Congress.

In addition to published works on irrigation and government sponsored reclamation programs, the writer relied heavily on Congressional documents, administrative records, manuscript collections,

engineering and reclamation periodicals, newspapers, and interviews with personnel of the Bureau of Reclamation. More rewarding than Congressional documents were the files, deposited in the National Archives, of the Reclamation Service and the Secretary of the Interior. The manuscript collection of Frederick H. Newell, Director of the Reclamation Service from 1907 to 1914, gave valuable information. The writer also sought and interviewed individuals connected with the Reclamation Service during this early period. Material from these sources provided the basis for a political history and economic analysis of federal reclamation financing from 1902 to 1919 with emphasis upon the development of repayment policy.

In discussing the financing of federal reclamation the writer uses a combination chronological-topical treatment. The discussion has two facets: the reimbursement of the government, and the demands upon the Treasury for additional appropriations.

Some of the more important topics dealing with reimbursement cover the legislative history of the Reclamation Act and its financial provisions; the determination of project feasibility and selection of projects; basic repayment issues, such as contracts to protect the government's investment; and collection difficulties. The study gives considerable attention to the political and economic factors influencing policy formation on both administrative and Congressional levels. It describes the efforts of Director Newell to establish and maintain a strict repayment policy, the activities of irrigation interests to secure repayment concessions, the weakening of repayment policy under the Administration of Secretary Lane, the provisions of the Reclamation Extension Act and their administration, and requests by irrigation interests for further financial relief. The investigation points out that while one can easily establish a repayment principle in theory, its implementation is beset with numerous problems and pitfalls.

Since Congress adopted the repayment principle partly to restrain the demands for future Treasury appropriations, the study includes a discussion of various efforts to expand the reclamation program prior to 1920. These include the Garfield cooperation certificates, the Bond Act of 1910, bills to provide federal financial assistance to irrigation districts, and World War I proposals for additional appropriations. Although until 1920 Congress generally declined to appropriate additional sums for reclamation, the barriers protecting the Treasury began to show signs of crumbling.

Early American experience in the organization and financing of government irrigation ventures reveals some of the problems which confront an administrative agency or legislature embarking on a reclamation program and suggests policies which the government should or should not pursue. The American experiment indicates that by adopting a repayment principle a government which undertakes a reclamation program will not likely limit its financial involvement to a relatively short-term advance of capital. 386 pages. \$4.83. MicA54-1945

THE METHODS OF OPERATION AND THE CREDIT ACCOMMODATIONS OF A COMMERCIAL BANK TO SMALL BUSINESS IN THE PITTSBURGH AREA

(Publication No. 7938)

Leonard Jesse Konopa, Ph. D.
University of Pittsburgh, 1954

In the belief that additional information on bank loans to small business will aid in better understanding their financial problems, this study of the methods of operation and credit accommodations of a commercial bank to small business in the Pittsburgh area was undertaken. It covers the post-World War II years 1946-1950. The technique adopted is that of studying the credit records of one commercial bank in detail and discussing with the loan officers of three other banks of varying size the results obtained in order to determine if the experiences of the latter were comparable.

For the purposes of this study, businesses were judged to be small on the basis of the number of persons employed. Manufacturers were considered small if they employed less than 100 persons; contractors, less than 60; wholesalers and truckers, less than 50; retailers and personal service companies, less than 20.

The lines of business activity selected as being representative of small business were the following: Manufacturers (Machine Shops, Food and Drink Processors); Construction Contractors (Asphalt and Cement Contractors, Home Construction Contractors); Wholesalers (Grocery Wholesalers, Electrical Distributors); Retailers (Bakeries, Grocery Stores, Women's Wear Shops, Men's Wear Shops, Shoe Stores, Music Stores, Hardware Stores, Electrical Dealers, Restaurants, Drug Stores, Gasoline Stations); Personal Service Companies (Beauty Shops, Cleaning and Tailoring Shops); Transportation (Truckers); Professional Service (Dentists and Physicians).

After discussing the operation of the Loan Division in the forefront of the thesis, data for each of the 21 lines of business mentioned above are exhibited in summary form and reviewed. Later, the data are summarized on an industrial basis. Some typical credit records for each particular trade are presented in the appendix.

Among the results found were:

1. Almost 45 per cent of the concerns obtaining credit were new ventures.
2. About one-fourth of the new Credit Department customers were old depositors at the bank.
3. A gap was found to exist with regard to the total assets, net worth, and annual sales of the manufacturers, construction contractors, and wholesalers on the one hand and the retailers, personal service companies, truckers, and dentists and physicians on the other hand.
4. In all, 1,279 loans, totaling \$14,669,700, were given. The overall average loan figure was \$11,500.
5. Credit ratios were used fundamentally as a guide rather than as a sole credit determining mechanism. The financial ratios of the bank's small

business customers were ordinarily equal to or better than those of Dun and Bradstreet or the Robert Morris Associates.

6. Unsecured loans amounted to about 40 per cent of the loans. A comparable percentage of the credit was conveyed by these loans. Conversely, 60 per cent of the loans given were secured and represented 60 per cent of the credit.

7. Although secured loans were indemnified by 11 fundamental forms of collateral, endorsements and guarantees, chattel mortgages, and accounts receivable were responsible for 62 per cent of the secured loans issued to small business.

8. With regard to rate of interest, it was found that: (a) the overall average rate of interest was 4.60 per cent; (b) there tended to be a direct relationship between the number of loans given and the rate of interest paid; and (c) there was an inverse relationship between the size of the loans and the rate of interest paid.

9. About 80 per cent of the notes issued, totaling 76.6 per cent of the credit, were used in procuring inventory, purchasing equipment, discounting accounts payable, or for working capital purposes.

10. As a group, short-term notes were responsible for four-fifths of the credit issued. The rest of the notes matured in 12 or more months. While approximately 60 per cent of the short-term notes were renewed an average of 4.3 times each, only 9.5 per cent of this group were renewed for more than a year.

11. A definite credit cycle was established for the bank. The high point in small business borrowing occurred during the month of October.

12. Term loans totaled 22.6 per cent of the loans granted to small business. They amounted to 17.4 per cent of the credit. Only 10 per cent of these small business term loans were issued on an unsecured basis. In this group were most of the G. I. business loans. In maturity they ranged from 14 to 180 months.

The general conclusion is that the legitimate financial needs of small business are being adequately taken care of by commercial banks in the Pittsburgh area. As indicated, the results of this study were discussed with the loan officers of three other banks in Pittsburgh. They were competitive with the bank under study. Therefore, they ordinarily operated in a similar manner and offered comparable financial services to small business.

291 pages. \$3.64. MicA54-1946

ECONOMICS, HISTORY

SOVIET ECONOMIC RELATIONS WITH IRAN, 1917-1930

(Publication No. 8643)

Robert Wesley Davenport, Ph. D.
Columbia University, 1953

This study investigates the major economic questions arising in Soviet-Iranian relations during the period from 1917 to 1930. Its principal purpose is to provide factual information which will be useful in evaluating the objectives, methods, and consequences of Soviet economic policy toward Iran during this period.

The study is divided into nine chapters. Chapter I defines the purpose and scope of the study and briefly describes the nature of the economies of the two countries under consideration.

Chapter II takes up the subject of the Treaty of 1921; it outlines the background out of which the Treaty arose, summarizes its major provisions and indicates the manner in which the provisions of the Treaty were implemented.

Chapter III traces the evolution of the various trading systems utilized by the Soviet Government for the conduct of its trade with Iran. It examines the regulations over the trade established by the Soviet Government and by Soviet trade agreements with Iran; it also describes the agencies and organizations employed by the Soviet Government for the conduct of its trade with Iran and the nature of their operations.

Chapter IV sets forth the basic features of the trade between the two countries and the changes occurring during the 1920's. Some of the aspects of the trade which are considered are its volume, balance, commodity composition, and relative importance to the two countries.

Chapter V analyzes the trade policy which the Soviet Government pursued with regard to the major commodities entering into Soviet-Iranian trade. In particular, it examines Soviet policies on the prices and the quantities of commodities traded.

Chapter VI discusses the role of transit trade in Soviet-Iranian economic relations and the evolution of Soviet policy with regard to permitting Iran to conduct trade with other countries in transit through Russia.

Chapter VII takes up the tariff and subsidies which the Soviet Government established with regard to trade with Iran, and the tariffs which Iran was permitted under Soviet-Iranian agreements to levy on trade with Soviet Russia.

Chapter VIII describes some of the more important Soviet enterprises and concession rights in Iran and the way in which the Soviet Government came to possess them.

The final Chapter (IX) summarizes the major conclusions which can be drawn from this investigation as to the aims and objectives of Soviet economic policy in Iran, the types of measures employed to attain these ends, and their effect upon the political

independence, economic development, and general welfare of Iran.

318 pages. \$3.98. MicA54-1947

HISTORICAL DEVELOPMENT AND BASIC POLICIES OF THE ACTORS' EQUITY ASSOCIATION

(Publication No. 8888)

Robert Edgar Faulkender, Ph. D.
University of Pittsburgh, 1954

This thesis is a study and critical evaluation of the Actors' Equity Association from its beginning in 1913 to its fortieth birthday on May 26, 1953.

Starting with the background of both the Actors' Society of America and the Theatrical Syndicate, the dissertation discusses the conditions of employment before 1913 and after the formation of this unique "white collar" union; views the actor as artist and worker; the theatre as art or commercialism; the strike of 1919; the Equity Shop; and the subsequent growth and development of the A. E. A. in authority and responsibility. The thesis covers the part played by A. E. A. in World War II, its varied yet consistent program concerning its relation with its membership, its policy toward alien actors, its struggle against censorship, and its stand on Sunday performances, child actors, and discrimination in the theatre.

Attention is focused also on A. E. A.'s employment policies, the evolution of the minimum contract, the recent changes in basic agreements, and the excellent record of the A. E. A. in arbitrating cases and claims. Concise material is presented concerning the A. E. A. and its jurisdictional affiliations with the Four A's (Associated Actors and Artists of America), Screen Actors Guild (S. A. G.), American Guild of Musical Artists (A. G. M. A.), American Theatre Council (A. T. C.), American Federation of Radio Artists (A. F. R. A.), American Guild of Variety Artists (A. G. V. A.), and Television Authority (T. V. A.). The current program relating to merger is previewed against the necessary background.

Other details are made available, including such morale-building factors as the unclaimed letter list, pay for broadcasting, junior memberships, honorable withdrawal cards and excused cards, relations with theatre groups and with the public, occupational aspects (week-end business calls and road accommodations), union welfare (dental program, optical membership plan, theatre seats for actors), and the two great stage charities: the Actors' Fund of America and the Stage Relief Fund.

The final chapter goes beyond a summary of the pre-1913 period, and the four successive periods of 1913-1917, 1917-1929, 1929-1940, and 1940-1952, and concludes with the enumeration of such permanent and substantial Equity achievements as recognition of the union, arbitration, the minimum standard shop, protection of manager as well as actor, and merger with other union groups; and reviews such

tangible gains as limitation of free rehearsal, payment for costumes, full pay for all work, pay for extra performance, prevention of strandings, and security of employment. It comprehends a brief approach to contemporary frontiers in the theatre.

273 pages. \$3.41. MicA54-1948

THE DEPRESSION OF THE NINETIES - AN ECONOMIC HISTORY

(Publication No. 8689)

Charles Hoffmann, Ph. D.
Columbia University, 1954

The depression of the 1890s, falling within a period of rapid industrial and manufacturing growth when significant market relationships changed, was one of the longest and severest since 1869. At its two troughs - 1894 and 1896 - economic activity was about 75% of capacity. Even after recovery commenced in 1897, most activities did not reach capacity until 1901-02 and some not until 1906-07. The depression in the U. S. lagged behind that in Europe as did the subsequent recovery in a pattern slightly varied from earlier periods of closer conformity.

The depression's nature is partially revealed by measuring significant contractions. The marked decline in building construction, starting in 1892 and dropping precipitately in mid-1893, was paralleled by a similar early decline in railroad construction. Railroad investment plans for rolling stock and rails were revised downward late in 1892. The early contraction in agriculture, dating back to 1891, was reflected in sharp price and income declines and in the farm equipment output drop.

In addition, relations with the world economy worsened. The international capital market contracted as the European depression commenced. U. S. payments difficulties arising from less foreign investment, repatriation of some foreign capital and worsening terms of trade grew with the depression. Immigration declined and emigration increased, causing increased payments abroad. Imports and some service items, however, reacted as cycle-stabilizers, easing the payments problem. Unfavorable capital movements, affected partially by Treasury monetary problems, combined with other items forcing an almost steady outflow of gold.

General investment decreased following the declines in construction, agriculture and railroad investment. Output of electrical and industrial machinery, ships and other producer durables declined greatly. This forced income flows to contract and durable and semidurable consumption declined significantly. Price drops were most marked for agricultural and metal products but were not sharp enough to forstall sharp declines in real output. Sharp declines in bank loans, as profit expectations grew darker, paralleled these real declines.

While most of the economy suffered from depressed

conditions, certain areas fared relatively well. Urbanization, a concomitant of manufacturing development, proceeded despite (maybe because of) the depression. Rapid growth of street railways, mostly electric, providing the transportation networks making urban and suburban growth feasible, occurred during the depression. While total building construction fell off, certain sectors followed the contracyclical expansion of street railways. Multiple dwelling and public building construction increased in some depression years. In mining, investment and output defied the general contraction. Export quantities increased yearly as manufactures grew absolutely and relatively. U. S. capital exports paralleled manufactured export increases.

After 1896 conditions grew better. The world market for food products strengthened and industrial equipment and material replacement gave impetus to expansion. The stagnation in economic activity ended, but not until 1901-02 were most productive factors being used at capacity.

The depression, thus, marked an important period in the transformation of an agricultural-industrial economy into an industrial-manufacturing economy. Agricultural income was determined in a relatively free world market while its expenditures were on products and services selling in more sheltered markets. Its terms of trade with the rest of the economy and world worsened in the depression. As manufacturing and mining grew in importance, however, the bargaining position of a manufacturing U.S. in world markets improved. No longer did it sell the bulk of its exports in unprotected world markets and buy in relatively protected markets. The depression represented an intensification of conflicting forces in the transformation of the economy. Its severity and long duration measured some real costs of the very rapid growth and transformation of the economy into a highly developed industrial order with ramifying economic connections throughout the world.

313 pages. \$3.91. MicA54-1949

ALBERT GALLATIN AND AMERICAN
FISCAL POLICY DURING JEFFERSON'S
FIRST ADMINISTRATION

(Publication No. 8182)

Robert Harold Smith, Ph. D.
Syracuse University, 1954

The funding of the debt, the National Bank, taxation, and economy in government were questions which had excited the popular mind and brought the Republicans to power under Thomas Jefferson, the spokesman of radical political thought in America. For a decade he and his associates had opposed almost every Federalist financial measure. As his party assumed office in 1801, the nation was in essentially sound financial condition. Under existing arrangements the public debt would have been repaid by 1824; there was no immediate threat of a

foreign war and the federal budget was not only balanced, it was yielding slight surpluses. The Jeffersonians, then, had an opportunity to reorient American fiscal policy. What were the fiscal achievements of the administration and the effects of its policies on American economic development?

Albert Gallatin, a land speculator, small manufacturer, member of the Pennsylvania Legislature, the United States Senate and the House of Representatives, had long been a critic of Federalist fiscal policy; he had written extensively on the subject and had several legislative achievements to his credit including the establishment of a standing Committee of Ways and Means in the House. Under Gallatin's leadership the administration hoped to achieve three financial goals: the prompt repayment of the entire federal debt, the reduction of taxation, and economy in government.

The first piece of fiscal legislation to be enacted by the Republicans provided for the repeal of all of the internal taxes. Assuming that tax repeal was desirable, the administration had two alternatives; to repeal some of both the internal taxes and the import duties, or to do away with all of the machinery for their collection, to achieve a substantial saving and improve the balance between the numbers of Federalists and Republicans who held public office. But the loss of the internal revenues forced the administration to increase duties on imports in order to meet the expenses of the war with the Barbary Powers and raised the question whether tax repeal was justified.

The cornerstone of Republican fiscal policy was the redemption of the entire federal debt. Under existing arrangements the debt would have been retired by 1824. Had Gallatin's program succeeded, repayment would have been completed by 1817. Republican debt retirement has generally been regarded as sound policy by historians of the period. But this repayment, chiefly to foreign holders, at a time when the nation had an unfavorable balance of trade, required the export of specie with the consequent curtailment of credit and may have had serious effects upon American economic development.

One of the most important issues during the decade between 1790 and 1800 and the one which perhaps gave rise to political parties in America was the establishment of the First Bank of the United States. Jefferson regarded banks as "more dangerous than standing armies" and James Madison had led the fight on the United States Bank in the Congress. Once in power, and largely as a result of Albert Gallatin's influence, the Republicans strengthened and expanded the Bank. It was granted a monopoly in the new territories, new branches were opened in the District of Columbia and New Orleans, and the Treasury kept upwards of ninety-five percent of its cash in the United States Bank.

The revenue loss from tax repeal and increased expenditures for debt reduction forced the Treasury to bend every effort to economize. The administration, however, was never able to live within its budget and there is no reason to conclude that it was more economical than its predecessors.

276 pages. \$3.45. MicA54-1950

ECONOMICS, THEORY

STRUCTURE OF THE PERSONAL INCOME
DISTRIBUTION: A METHODOLOGICAL
STUDY OF A SAMPLE OF DELAWARE
TAX RETURNS FOR SELECTED YEARS

(Publication No. 8541)

Bernard Clyman, Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor Simon Kuznets

This monograph presents three basic analyses: (1) an analysis of the percentage shares of economic income received by percentage bands of tax return units ranked by size of economic income per unit (called the "basic variant"), (2) an analysis of the changes in the shares received when alternative definitions of income, recipient unit and population coverage are used, and (3) an analysis of the distribution of selected social groups. The sample data studied refer to Delaware in the years 1925, 1929, 1932, and 1936.

In Chapter II, the basic structure and characteristics of the sample are compared with the published data of the State Tax Department. The limitations and qualifications of the sample are noted so that the reader may better understand and interpret the findings of this inquiry.

In Chapters III and IV, the basic income variant is analyzed first and then the effects of changing coverage and definitions are investigated. In Chapter III, income shares are emphasized; in Chapter IV, receipt type components. In both chapters, detailed analyses are presented of the customary differences existing in income shares and income composition as one descends the income scale. Temporal change in the income shares received is also analyzed. Since this analysis, however, is inclusive of population changes, a study of temporal displacement is undertaken as well. Examination of the units in the sample for one selected year but not in for another discloses that the effects of such displacement over time are felt most for a wide band of lower income groups and for the very top income group.

With respect to population coverage, the effects are measured of using different methods of treating the numerically indefinite income returns (e. g., those listing "less than taxable income"); with respect to recipient unit definition, the effects are measured of changing from an aggregate to a per capita income per return unit ranking; with respect to income scope, the effects are measured (in combination and separately) of changing (1) the income concept used for estimating percentage shares received and (2) the income concept used for unit size ranking. The three concepts studied are total, economic, and net income. For the most part, each analysis reveals rather minor changes in share levels and income composition. Where differences do appear they appear at the distribution extremes.

In Chapter V, the distributions over the income scale of five occupational, three community size and

five return unit size groups are examined. Study of their cross-classifications, permit the conclusion to be drawn, in every case but one, that the unit distributional pattern of each characteristic is independent of the influence of the other characteristics. An additional comparison of the characteristics under return unit and per capita rankings reveals, despite wide reranking of single and multiple person units, that the occupational and community size distributional patterns remain substantially the same. Again the distribution extremes provide the greatest exception.

The final section of the chapter shows (1) the importance of each social group-income band cell in building up the income shares of the total distribution, (2) the shares received of each social group's own income by income bands that are proportionate divisions of that group's own return unit population, and (3) the degree to which the shares of each social group's income received by income bands of the total unit population reflect the shares received of that group's income by income bands of the group's own unit population.

In Chapter VI, a summary of each of the previous chapters is presented.

353 pages. \$4.42. MicA54-1951

THE POPULATION ARGUMENT OF THE
STAGNATION THESIS IN THE UNITED STATES

(Publication No. 8731)

Thomas Mayer, Ph. D.
Columbia University, 1953

The population argument is an important aspect of the stagnation thesis. This argument states that in the past population growth has provided a powerful stimulus to investment and that the decline in the rate of population growth will lead to strong depressions and weak booms unless counteracted by Government policy. This proposition rests on the following arguments: Population growth by increasing average family size and at the same time by also increasing the number of families reduces the savings ratio. Housing in particular is affected by the increase in the number of families. Moreover, a growing population has a more capital-intensive demand than a stable or declining one. Investment is also increased by the acceleration effects of the increased demand and by the need to equip a growing labor force. In addition, population growth increases investment by reducing risk.

The first of these arguments, the effect of large families upon the savings ratio can be shown to be correct if it is assumed that a family's saving does not depend upon the expenditures of other families. If Professor Duesenberry's savings theory is accepted, however, the effect of family size upon the national savings ration becomes indeterminate. Moreover, the decline in population growth increases the proportion of the population in the older age

groups, and their dissaving tends to lower the consumption function.

The demand of a rapidly growing population is found to be not significantly more capital intensive than the demand of a more slowly growing population. Moreover, if a growing population had a more capital intensive demand than a stable one, the effects of this on employment would be less than is claimed by the stagnationists.

While family size appears to bear little relation to the proportion of total outlay spent on housing, population growth does stimulate both residential and public utility construction by increasing the number of families to be housed.

The effects of population growth on industrial investment are more difficult to determine. If the increased labor force finds employment as soon as it enters the labor market then the resulting increase in demand stimulates investment through the acceleration principle. If the additional labor force, however, does not find employment at once, then the proportion of the total labor force unemployed increases. It is not possible to say definitely which of these alternatives is more likely. The effects of population growth on investment through the reduction of riskiness seems quite minor.

When population growth and the business conditions are compared since 1870 the stagnationists are unable to explain, without doing damage to other parts of their theory, why the effects of a declining rate of population growth did not show themselves previously. A comparison of population growth and business conditions for each decade separately does not reveal any clear conclusions. It appears, however, that the stagnationist's explanation of the depression of the 1930's has to be rejected.

A further current weakness of the stagnation thesis is that current population forecasts indicate a greater rate of population increase than was envisaged at the time the stagnation thesis was originated. In view of the present population forecasts it seems unlikely that stagnation will result from a decline in the rate of population growth before 1975, the date at which most population forecasts stop.

159 pages. \$1.99. MicA54-1952

**INSURANCE AND ECONOMIC THEORY: AN
ANALYSIS OF THE GENERIC CONCEPT OF
INSURANCE, AND ITS APPLICATIONS
IN MICROECONOMIC THEORY**

(Publication No. 8573)

Irving Pfeffer, Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor David McCahan

Insurance Economics is a comparatively new field of study which has been emerging as a result of the interdisciplinary approach adopted by students of both insurance and economics. Like any other product

of the marriage of different bodies of thought the preliminary activities in the new area are largely semantic in nature. The terminology of each science or humanism has been developed historically within a unique frame of reference. The problems of each discipline are in large measure unrelated to the problems which concern the students of other branches of learning. This study is an attempt at effecting a rapprochement between the fields of insurance and economics.

It would appear that the first requisite for the union of insurance and economics is a clarification of terms. The economist must grasp the significance of the insurance concept as conceived by the specialist if he is to weave this important and pervasive mechanism into the fabric of economic theory. Economists have favored that description of insurance which regards it as an exchange of a small definite loss for the elimination of the possibility of a large but improbable one. Such a conception displays an unjustified presupposition about the forecasting ability of the actuary, and leads to the illicit inference that since insurable hazards are amenable to precise discounting methods they fail to constitute a problem for economic theory. If the insurance premium can serve to eliminate all insurable risks, then the residual risks of the economic system are properly the only subject for studies of the entrepreneurial function.

The first part of the present study represents one approach to the problem of clarification of the language of insurance economics. The generic definition which was derived from an analysis of the usage of lawyers, historians, economists, insurance specialists and others, identifies the concept of insurance which is most appropriate for the purposes of the economic theory of the firm. Insurance as a mechanism is shorn of some of the trappings which are essential for the insurance institution. Such familiar characteristics of sound insurance operations as insurable interest and the indemnity principle are shown to be unnecessary for the economic concept of insurance. This concept of insurance has been labelled the "generic" concept in order to indicate that it is broader in scope than any of the specific forms in which insurance may appear.

In the second part of this study an attempt is made to indicate the role of insurance – the generic concept – in a number of branches of the theory of the firm. The conceptual difficulties are almost insurmountable, but by a process of classification the part which insurance plays can be elucidated.

The temporal framework required by the insurance mechanism is determined by the time-spanning nature of the device. Insurance requires a dynamic time setting which permits the impacts of uncertainty to bear on the analysis of the economic process. The specification of the time framework almost inevitably becomes the first problem of insurance economics.

The role which insurance plays in the areas of entrepreneurial behavior, distribution theory, production theory, and the theory of consumer's preference, is developed in the second part of this dissertation.

Insurance Economics is a large field. Most of the terrain has been unexplored. Much remains to be done. The macroeconomic aspects of insurance economics have been examined frequently during recent decades, but the theory of the firm has been relatively untouched. Further studies in the

applications of specific branches of the theory should serve to cast much light on the field and contribute to a better appreciation of the role of insurance in economic affairs.

241 pages. \$3.01. MicA54-1953

EDUCATION

EDUCATION, GENERAL

THE READABILITY LEVELS OF RECENTLY PUBLISHED ELEMENTARY SCIENCE TEXTBOOKS

(Publication No. 8881)

Jacob Eugene Burkey, Ph. D.
University of Pittsburgh, 1954

The study was undertaken to determine the readability levels of recent textbooks on science used in the elementary schools, and to analyze the vocabulary load as represented by the vocabulary indexed in determining the readability levels of the textbooks. The four elements of the problem are as follows:

1. To determine the readability of recently published science textbooks.
2. To analyze the vocabulary, as represented by the vocabulary indexed in determining the readability levels.
3. To identify the technical vocabulary as distinguished from the general vocabulary and to determine the weight of each type of vocabulary.
4. To determine the nature of gradation within the textbooks.

At the present time there are numerous formulae which can be used to determine the reading grade levels of books. After careful consideration of the different techniques in use today the author decided to use the Yoakam Technique. Aside from the fact that it meets the requirements of validity and reliability it also offers an economy of time which is an important factor to be considered in examining textbooks for reading difficulty. The selection of the formula was also influenced by the fact that the Yoakam Technique is based entirely on vocabulary which is a significant part of this study.

A comparison of the reading grade levels, as predicted by the Yoakam Technique, with the levels as designated by the publishers, revealed that 18 of the 41 textbooks scaled within the same grade level, seven were below grade level, and 16 were found to be above grade level. Since approximately one-half of the science textbooks are scheduled too high or too low by the publishers, careful consideration

should be given to the grade placement of textbooks for use by pupils in the elementary grades.

According to the Thorndike list of vocabulary difficulty approximately four per cent of the scaled words rated above the third thousand. The inference to be drawn here is that the vocabulary load is not too heavy, but the high index numbers of a certain percentage of the scaled words has a tendency to upgrade the reading material. Approximately 20 per cent of the words have a serial number above the tenth thousand on the Thorndike Teachers' Wordbook of 20,000 Words.

In an attempt to analyze further the vocabulary, the author was interested in the extent to which the vocabulary burden consisted of technical words. Each textbook which scaled higher by the Yoakam Technique than the predicted grade placement by the publisher was checked to determine the percentage of the vocabulary load which was the result of the use of technical words. A comparison showed that approximately 35 per cent of all the scaled words were of the technical variety.

There were 784 words designated as technical, with an average serial number of 8.2, while 2,168 words, with an average serial number of 7.9, were considered as being of the general type. Since the technical vocabulary is less familiar to the pupils in the elementary grades, it may be assumed that the technical vocabulary will be a contributing factor in the upgrading of the books tested in this study.

The findings in this study indicate that there are extreme internal variations in the readability levels of the reading matter within a textbook. The correlation between the order of difficulty of the scaled pages and their rank within the textbooks ranged from a positive .70 to a negative .66 with an average of positive .03, which indicates that the gradation is not consistent. The fact is further substantiated by a study of the fourth-grade elementary science textbooks which showed that there are approximately as many of this series of books with the most difficult third of the reading matter in the beginning of the book as at the end. A series of graphs show the extent to which the reading matter varies in difficulty within the textbooks.

A general conclusion is that elementary science textbooks are well written but through further research and continued improvements in vocabulary control they will more closely fit the characteristics of the readers.

81 pages. \$1.01. MicA54-1954

ANALYSIS OF THE FINANCIAL STATUS OF MEN'S AND WOMEN'S RESIDENCE HALLS OF SELECTED STATE TEACHERS' COLLEGES

(Publication No. 6108)

Kenneth Milburn Collier, Ed. D.
Indiana University, 1953

The Problem:

This study was directed toward finding the present financial status of residence halls of selected state teachers' colleges for the years of 1948-1951, and endeavored to describe and compare the present practices in the allocation of funds for residence halls for women and men.

Data from the following institutions were included in this study:

Ball State Teachers College, Muncie, Indiana
Central Missouri State College, Warrensburg,
Missouri
Illinois State Normal University, Normal, Illinois
Iowa State Teachers College, Cedar Falls, Iowa
Kansas State Teachers College, Emporia, Kansas
Michigan State Normal College, Ypsilanti, Michigan
Nebraska State Teachers College, Kearney, Nebraska
State Teachers College, St. Cloud, Minnesota
Wisconsin State College, Stevens Point, Wisconsin

Procedure:

A visit was made to each of the nine campuses of the selected state teachers' colleges. Much of the data was obtained from the college financial reports and audits.

Conclusions:

The legal acts of the nine states studied have provided for residence halls for teachers' colleges in various ways. Much of the actual operation and the building of residence halls have been left to the governing body of each individual college. There is no distinction between the sexes in the legal acts, but the governing bodies of the colleges have made a distinction on the college campus in favor of the women. Women are the predominant inhabitants of the residence halls of the nine teachers' colleges studied, while many men are using private homes for places of abode or are commuting from their own family homes. Current residence hall construction is largely for women occupants.

It is apparent that profit and loss in operation of the residence halls are primarily a result of each institution's practice, for legislative acts do not provide the exact procedure for keeping accounts, or items to be included in the expenses, or the amount which must be charged for specific items. This leaves the institution in a position to use college funds to help support the residence halls or to use residence hall funds to help support the general budget of the college.

When residence halls are not provided for by direct state appropriations, the sale of bonds is one of the most important factors in building such halls. The interest rates vary on residence hall bonds depending upon present indebtedness of the college, whether the interest on the bonds is taxable, the premium paid to the college for the purchase of the bonds, and the span of years for which the bonds are issued.

It has been assumed that the size of the city in which the college is located plays an important part in the number of students that can be housed in private homes. There is evidence to indicate that this may be a false assumption. The number of students residing in private homes depends more upon the college's policy and upon administrative decision. One can assume that in the future less space for students can be found in private homes since most new homes are constructed only to meet the needs of the family unit. To determine the need for residence halls in the future the estimate of these needs should be based upon the number of students now residing in private homes rather than the total number of full-time students, for such other factors as the percentage of students living at home and the percentage commuting are likely to remain stable.

A major problem in the successful operation of residence halls is the difficulty in filling them to capacity during summer sessions which helps to keep them self-sustaining. A full twelve-month academic program may be the solution to this problem. Room rates and capacity are factors which determine to a great extent the total income of residence halls. The sums received from deposit forfeits, guest fees, and the housing of visiting groups are small in comparison with income from room rates. The room rates have shown a decided increase during the period 1948-1951, and seem to show a higher percentage of increase than the percentage of increase for actual expenses. Residence halls can now be operated to pay for themselves and the trend is to provide additional campus housing.

It is quite evident that all the colleges studied are spending more for women's residence halls directors than they are for men's, and the colleges having small-capacity residence halls are paying more in proportion for staff than the larger residence halls. There is a wide range in maintenance wage costs, depending to a great degree on the responsibilities each institution has placed upon the students to care for their rooms. The total wages of residence hall personnel comprises 44% of the total residence hall income. The charges for administrative services are an important item to be considered in the operation of any residence hall. Often members of the college administrative staff devote full- or part-time to the operation of the residence halls. There is no uniform practice as to how much of their salaries are carried on the residence hall budget.

Charges for utilities against residence hall budgets usually are a large item, governed as to amount largely by the decisions of the business offices and the college presidents. For the most part utilities are not actually measured by meters, but rough estimates are established by one means or another. The

geographic location of the institution has little or no influence on the rates and charges for utilities.

Repair and maintenance costs are large items in residence hall budgets, equalling 20% of the total income. There is little uniformity among the colleges as to the amount charged for maintenance and upkeep of the buildings. Many items of repair and maintenance are carried on the college budget instead of the residence hall budget. The colleges need to re-study the amount and type of expenses which are levied against the residence halls and provide a system of cost accounting that will provide adequate records.

Because various agencies have assisted in the construction of residence halls, it is difficult to establish accurate figures for the amount of money used in their construction. Estimated values seem to be a little better index than actual money spent. These take into consideration the facilities furnished by the state and other items made available by the federal government. All nine states have provided substantially toward residence hall construction. The funds for construction of halls of residence have been provided mostly through state appropriation or the borrowing of money by means of bonds. At present none of the nine teachers' colleges has sufficient funds available for the construction of new residence halls without relying heavily on borrowing money. Balance from residence hall operations, in instances where there were profits, have been used in other ways than in the building of additional housing for students.

It would seem advantageous for colleges to give more thought to the cost per program unit rather than to the initial capital outlay and the yearly cost of maintenance and operation. Cost accounting is becoming a necessity for every college administering finances of residence halls for their students.

227 pages. \$2.84. MicA54-1955

THE VOCABULARY LOAD OF THE NATION'S BEST SELLERS FROM 1662 TO 1945: A STUDY IN READABILITY

(Publication No. 8885)

James Calvin Craig, Ph. D.
University of Pittsburgh, 1954

The extensive research in the field of readability since the early 1920's has led to the almost unanimous agreement among specialists in reading that vocabulary load is the most important factor in determining the readability of a book. Furthermore, all readability formulas use some measure of vocabulary difficulty as a part of their method.

The purpose of this study was to measure the vocabulary load of the nation's best sellers from the early days of our country to the present, to discover trends, if any, in the reading difficulty of popular books throughout the years, and to inquire into the relationship between the reading difficulty of a book and its popularity as determined by sales.

The Yoakam Readability Formula was selected to measure the readability levels of the best sellers. The books were arranged chronologically for the purpose of determining trends, and in the order of their difficulty for the purpose of determining levels of difficulty, range of difficulty, and concentration of difficulty. As a matter of interest, special attention was given: (1) the Carnegie list of 100 Best Books, (2) the 21 top best sellers, (3) the best-selling poetry, (4) the historical best sellers, (5) religious books on the list, (6) mysteries, (7) children's literature, and (8) the classics.

The following conclusions resulted from the study:

1. The nation's best sellers range in difficulty from a reading grade level of 3.2 to 15.6.
2. The median difficulty of the overall list is 10.5.
3. Only 8.4 per cent of the best sellers rated below the eighth-grade level of difficulty. Ten per cent rated within the eighth-grade level; 15 per cent within the ninth-grade level; 24 per cent within the tenth-grade level; 22 per cent within the eleventh-grade level; 10 per cent within the twelfth-grade level; and 10.5 per cent above the twelfth-grade level.
4. No overall trends in difficulty were evident.
5. The median difficulty of best sellers written before the American Revolution was 1.6 years below the overall median. Best sellers written since 1940 have a median difficulty 1.2 grades above the overall median.
6. The median difficulty of best selling poetry was 12.2, nearly two years above the overall median.
7. The median difficulty of the children's literature was 8.8. This is nearly one-half year above the educational age of the average American adult in 1940.
8. The median difficulty of the classics was 10.5, the same as the median difficulty of the overall list of best sellers.

The following general conclusions are indicated:

1. Most best sellers are written within the ninth-, tenth-, and eleventh-grade levels of difficulty.
2. Most popular books and most classics are too difficult for the average American adult to read with understanding.
3. Only 11 per cent of the best sellers were within the reading capacity of 50 per cent of the adult population in 1940, and 30 per cent of the classics were too difficult for more than 80 per cent of American adults.
4. The following examples from the results of this study suggest that many of the books which children are "required" to read in school are far too difficult for most of them to read with ease and understanding: The Spy (11.6); Silas Marner (10.0); The Federalist (13.5); The Luck of Roaring Camp (14.8); The House of Seven Gables (13.8); Les Miserables (12.3); Sketch Book (13.8); Moby Dick (14.0); Ivanhoe (12.4); Scott's Poems (13.5); Macbeth (12.0); Midsummer Night's Dream (11.5); Gulliver's Travels (10.3); Penrod (13.0); Twice-Told Tales (12.4); Paradise Lost (12.4); Vanity Fair (12.5).

111 pages. \$1.39. MicA54-1956

**A SURVEY OF THE RELIGIOUS CONTENT
OF AMERICAN WORLD HISTORY TEXTBOOKS
WRITTEN PRIOR TO 1900**

(Publication No. 8886)

John Harper Dawson, Ph. D.
University of Pittsburgh, 1954

This is a study of the amount of space given to religion in the American world history textbooks written prior to 1900, and an analysis of the nature and treatment of the religious content by subperiods. The survey shows the percentage of religious content in each textbook and the trends observed in the treatment of this content.

The problem involved the examination of 95 world history textbooks which were available for analysis. These books were all published in the United States to be used in the elementary and secondary schools. This is an historical-documentary type of research. The religious content has been determined by an examination of each section and page of each textbook. Material was considered as "religious" when it related to objects of worship, leaders, writings, customs, teachings, art, maps, pictures, denominations, controversies, persecutions, tolerance, and exhortation. Each content chapter, of which there are four, includes charts tabulating:

1. Religion mentioned on title pages, in prefaces, table of contents, questions, index, chronology, and introduction.
2. A comparison of the space given to religious content in the various textbooks.
3. The space given according to the various religions.
4. A comparison of the space given religious content in each of the ancient, middle, and modern eras of history.

Each content chapter also includes a section devoted to the treatment given the religious content in the various textbooks.

The results indicate that a greater percentage of the question sections, indexes, and chronologies in the world history textbooks mention religion than do the title pages, prefaces, tables of contents, and introductions. The average percentage of religious content per book shows a decline from 11.44 per cent in the first period of the study (1795-1825) to 8.00 per cent in the last period (1876-1899). All of the major religions receive some mention, with Mohammedanism being accorded more than any other non-Judaistic-Christian category. The Ancient History sections of the books average more religious content than either the Middle Ages or Modern History sections. The treatment of the religious content shows that the authors presented information about each major religion. Some of this information was presented objectively, while other portions of it are marked with the personal bias of the author. Christianity receives more favorable treatment than Judaism or Other Religions. Protestantism is accorded

more favorable mention than other Christian denominations. The authors were apparently monotheists and Christians, and all but a few of them were Protestants. Twenty-one of the books were written by Protestant clergymen. The treatment of the religious content shows a general trend toward more objectivity and less bias in the later textbooks of the study.

The general conclusion is that the religious bias of the authors influenced the fact that Christianity and Protestantism received more favorable treatment in the world history textbooks analysed in this study. As the principle of the separation of Church and State asserted a wider influence during the century in America, there was a general decrease in the religious content of the world history textbooks. With the increasing diversity of the religious backgrounds of students in the public schools, the religious bias in the world history textbooks declined. A study of the religious content of these books provided the student with more general cultural value than specific and personal religious value.

262 pages. \$3.28. MicA54-1957

**THE ATTITUDES OF PUBLIC SCHOOL PATRONS
AND NON-PUBLIC SCHOOL PATRONS
TOWARD PUBLIC EDUCATION**

(Publication No. 8887)

Richard Ward DeRemer, Ed. D.
University of Pittsburgh, 1954

This is a study of the relationship between public school patronage and attitude toward the public school. The study which was confined to urban places in the Pittsburgh area used 12 public school systems. Public school patronage was defined for the purposes of this study as follows:

1. The public school patron: A person with children attending a public school.
2. The nonpublic school patron: A person without children attending a public school. The following divisions of this group were used for analysis:
 - a. those who do not have children;
 - b. those without children or who use nonpublic schools for their children's education;
 - c. those who attended nonpublic schools;
 - d. those who attended and whose children attend nonpublic schools;
 - e. those who are nonProtestant.

The statements of problems, on which the interviewees were asked to express an opinion, were grouped under the following categories (the number of statements within each category is given):

1. Willingness to accept change and to seek improved methods (six statements).
2. Willingness to extend the services of the public

school beyond that now generally accepted (eight statements).

3. Willingness to continue the principle of separation of Church and State (five statements).
4. Willingness to accept the public school as an integral part of the community (five statements).
5. Willingness to broaden the curriculum (four statements).
6. Willingness to pay for professional education services (two statements).

The replies to the statements of problems were treated as favorable or unfavorable depending on the action indicated by the wording of the category within which the statements were used.

The chi-square test of independence was used to check the representativeness of each of the two samples. Reliability of replies was tested by using the standard error of a per cent. The significance of the appearance of differences in percentages of favorable replies to items was determined. The one per cent level of confidence was used to determine those differences in percentages which could be generalized for the Pittsburgh area as a whole.

The general test of independence or lack of relationship between school patronage and attitude toward the public school was contingent upon a series of null hypotheses which were tested in the study (the relationship of school patronage to each item in the interview schedule). The results indicate that we may confidently reject the hypothesis that there is no relation between public school patronage and attitude toward the public school. Several of the general conclusions determined in the analysis of responses included:

1. There is a difference in attitude on many public school problems existing between public school patrons and nonpublic school patrons.
2. The difference in attitude between public school patrons and nonpublic school patrons becomes more apparent when the divisions of the nonpatrons are analyzed with the patrons.
3. The most significant differences between the public school patrons and the nonpublic school patrons was found in the category, "Willingness to continue the principle of separation of Church and State."
4. The differences in attitude as evidenced in this study are not as pronounced between patrons and nonpatrons without children as they are between patrons and the other divisions of the nonpatrons.
5. The most pronounced differences in attitude found was between the patrons and the nonpatrons who had attended nonpublic schools. The next most pronounced difference was found to be between the patrons and the nonpatrons who were nonProtestant.

The general conclusion is that the test of the 30

minor hypotheses for the two basic samples, and between the patrons and each division of the nonpatrons, allows one to assume with a reasonable degree of confidence that there is some type of relationship between public school patronage and public school attitude. 156 pages. \$1.95. MicA54-1958

THE UNIVERSAL DECLARATION OF HUMAN RIGHTS AND THE DEMOCRATIC REPRESENTATIVE: A STUDY OF COMING TO AGREE

(Publication No. 8733)

Bernard Patrick Meighen, Ph. D.
Columbia University, 1953

It is assumed for this study that at least one meaning of democracy is common action based upon a free and dynamic common consent. New communities must be built, then, by interspersation and, to this end, discussion is accepted as one chief means.

The study has analyzed the summary or semi-verbatim records of those who drafted and adopted the Universal Declaration of Human Rights. The purpose has been to learn as much as possible of the deliberative, interspersative process of discussion in terms of which a significant agreement on the Declaration was reached. The hope has been that anything so observed might have important bearing more generally upon the conduct of interspersative discussion and might serve to extend man's control over this means of building needed community.

Using the summary records, the study searches out those factors of agreement which appeared recurrently within the discussions leading to the Declaration. These factors are grouped and given titles and each group is presented with some of the outstanding data pertaining to it. The groups are also examined and interpreted, both to emphasize their probable meaning for agreement within the UN bodies concerned and to suggest any meaning which they may have for agreement more generally.

As categories of factors important to the agreement on the Declaration, "competence", "precedent", "time", "timing", "length" and "implementation" are identified. "Competence" represents the authority delegated to the negotiators on the Declaration. Its factors promoted a wide acceptance of the Declaration because, through them, the negotiators recognized the fact that they were permitted to perform only certain limited functions in certain limited ways.

Factors of "precedent" were important for accord because they were based on official customs, judicial decisions, laws and folkways and were thereby a probe for locating many of the more important of the existing common beliefs about human rights.

"Time" comprehends the requirements, in the drafting of the Declaration, of hurry against the march of events and yet of delay to become adjusted to change. Factors of "timing" were important, on the other hand, because, through a selection among

the proposals which competed for attention, they made possible a return to more general discussions when more particular ones disrupted. In this connection, they peculiarly concerned minority recognition. Indeed, factors of "time" and "timing" both appeared to be of significance in the majority-minority relations which existed.

"Length" refers to the size of the Declaration. Factors of this type helped to locate a safely general quality and a universality, simplicity and clarity for the UN statement. They also advanced a ready popular understanding of and response to the document.

"Implementation" covers the claims which pertained to realizing the rights of the Declaration. As the Declaration was developed, the other factors could favor broader generalizations as well as more concrete ones. A dependence on these factors alone risked an inadequacy of agreement. The factors of implementation were an essential counterpart of the others.

In the interpretation of the factors, it is explained how they are dynamic in character and how they are or may become a means whereby the general public enters into representative debates and exerts its claims. It is also indicated that the factors constitute places to take hold in efforts to overcome democratically certain common political differences. That the human rights program should be advanced by further UN attention to such arguments as the study has grouped appears clear. Beyond this, the only claim is that the study may have lessened the chances of future "bits of paper".

211 pages. \$2.64. MicA54-1959

EDUCATION, ADMINISTRATION

A SURVEY OF ADMINISTRATIVE PRACTICES AND REGULATIONS PERTAINING TO TEACHER ABSENCE IN SELECTED SCHOOL DISTRICTS IN PENNSYLVANIA

(Publication No. 8877)

Henry George Beamer, Ed. D.
University of Pittsburgh, 1954

This study had for its purpose the survey of administrative practices and regulations pertaining to teacher absence. Considerable information concerning absence was found to be available in literature, in textbooks of school administration, and in the many studies of absence made in recent years. This information was grouped under four general headings; first, studies of teacher absence; second, absence provisions and regulations; third, studies relating to teacher health; and fourth, the reasons for absence.

Further information concerning such practices and regulations on teacher absence was obtained by means of a questionnaire sent to the superintendents

of the districts in the State. The responses were carefully analyzed and tabulated under the different phases of the problems relating to absence.

The comprehensive list of reasons for the absence of personnel was checked for legality, board approval, and administrative acceptance, by the groups of districts according to population. They were checked also for approval of payment to teachers during the absences and whether such absences had occurred during the year.

Practices and procedures used in the administration of absence regulations differed to some extent in the districts. Reporting practices were found to be essential to the efficient operation of schools. Special consideration was given to unexpected absences but teachers were expected to conform to regulations. Approved absences were classified as those of short duration and those of a semester or more in duration. Specific practices were followed in their administration. Districts were governed by absence laws but considerable leeway was allowed for local practices. Districts reported the employment of physically handicapped individuals and the relationship of such handicaps to the absence problems.

The evolution of mandatory and permissive legislation relating to absence and the transformation of such legislation into the rules and regulations of the districts were developed. The manner of the interpretation of the rules and regulations resulted in different practices and procedures. Less than half the districts reported having printed rules and regulations but some procedure was necessary to keep teachers informed. Districts showed variations from those which adhered strictly to mandated regulations, to those very liberal in their interpretation of the laws. Special sick leave provisions and insurance plans were reported.

The use of remedial measures to counteract excessive absence was accepted as a control procedure. Selection of physically fit individuals followed by the use of specific methods to maintain good health resulted in a reduction of absenteeism. Environmental factors have considerable effect on absence problems, and adverse conditions, when corrected, were indicative of this fact. Absent teachers should be replaced by the best substitute teachers available.

The general conclusions derived from the study were:

1. The review of literature showed teacher absence to be more prevalent than formerly and for a greater variety of reasons; that absence averaged about five days a year, women teachers being absent approximately twice as many days as men; and that districts provided for such absence with sick leave plans.
2. The administrative attitude toward absence and the reasons for absence showed greater acceptance in the larger districts.
3. Considerable variation existed in the districts concerning reporting practices and the granting of permission for absence. Larger

districts reported more absence because of maternity and sabbatical leaves, such absences being more generally approved.

4. The trend toward printed rules and regulations in the districts has increased in recent years, but the matter of interpretation and of application of such rules showed considerable variation.
 5. Boards of education have recognized the importance of more careful selection of prospective teachers and the use of specific methods to maintain the health of teachers in service.
- 245 pages. \$3.06. MicA54-1960

**TEACHER SELECTION AND EVALUATION:
WITH SPECIAL ATTENTION TO THE VALIDITY
OF THE PERSONAL INTERVIEW AND THE
NATIONAL TEACHER EXAMINATIONS AS
USED IN ONE SELECTED COMMUNITY
(ELIZABETH, NEW JERSEY)**

(Publication No. 8645)

Eleanor Cecilia Delaney, Ph. D.
Columbia University, 1954

The present study - an attempt to determine the validity of some of the procedures currently used to select and evaluate teachers - was undertaken because of a growing concern on the part of teachers, school administrators, parents, and the general public over the problem of getting and keeping good teachers for the public schools. It includes, in addition to a general study of the related problems of teacher selection and evaluation, a detailed analysis of two of the procedures used (the personal interview and the National Teacher Examinations) both in relation to their current use in the schools of the United States and in the community used in a laboratory sense for the collection and analysis of data. The purpose of this report of the study is to make available certain general implications concerning the problem which are (1) based on general principles drawn from a survey of the literature and research in the field, (2) illustrated by facts taken from one selected community used in a laboratory sense, and (3) applicable to some degree for use in communities interested in evaluating and improving their local programs of teacher selection and evaluation.

Among the most important findings are the following:

1. A survey of the use made of the National Teacher Examinations in 1949-50, based on returns from 309 of the 350 school systems listed by the sponsors of the examinations as endorsing the use of the National Teacher Examinations and requiring or encouraging applicants for positions in their school systems to submit records on these examinations

together with their other credentials" revealed the following:

- a. While most of the 309 school administrators replying to the questionnaire expressed their approval of the instrument, few school systems made use of the examinations in their teacher selection programs. Only 22 school systems required that candidates take the examinations, 53 systems were making nominal use of them, and 232 school systems reported that they were making no use of the examinations.
 - b. The teacher shortage was given by 72 administrators as the reason for failure to use the examinations. However, only 15 of the 232 not using the examinations reported any definite plans for their future use.
 - c. No instance was reported in which the examinations are, contrary to the expressed wishes of their sponsors, used as the sole selection technique. No general pattern was found to be followed in the use of supplementary procedures. In most instances, an interview and an evaluation of training and experience were used with the examinations, with the latter given a weight of from 10 to 70 of a possible 100 points.
2. A survey of teacher evaluation procedures used in 59 school systems affiliated with the Metropolitan School Study Council (a group of schools in the metropolitan New York-New Jersey-Connecticut-Pennsylvania area organized for the exchange of ideas and practices in education) showed no agreement as to the teachers to be rated; the form of the evaluative instrument to be used; the characteristics on which teachers should be evaluated; the emphasis to be placed on such broad areas as personal adequacy, teaching effectiveness, and human relations; the frequency of ratings; or the way in which characteristics should be described in order to better administer and interpret the evaluation instrument used. There is, in fact, not even agreement as to whether a rating instrument is desirable.
 3. An analysis of the interviewing process used in the laboratory community, including a study of the correlation existing between the scores given to eighty-one elementary school teachers by (a) an interviewing committee rating teacher candidates on personality characteristics, and (b) the principals who worked with these teachers in actual teaching situations, showed that:
 - a. A highly significant correlation ($r = .486$) existed between the scores given on the same interviewing form under the two sets of conditions.
 - b. Certain personality factors can be assessed with a reasonable degree of accuracy in a planned interview which uses more than one interviewer, considers definite

characteristics on a standard form, and standardizes as much as possible the interviewing technique used. The factors which were considered in this admittedly small-scale study were Voice and Speech, Appearance, Alertness, Ability to Present Ideas, Judgment, Emotional Stability, Self-confidence, Friendliness, and Personal Fitness for the Position.

4. A study of the ninety-three teachers who took the National Teacher Examinations between 1930 and 1948, completed the interviewing process, and were given appointments to elementary schools in the laboratory community showed that the selection program set up in that community had – perhaps because of the scarcity of good elementary teachers during period considered – little functional value. About the same proportion of candidates in the groups with highest and lowest scores in each of the selection techniques was employed, making the group of teachers available for study a noticeably heterogeneous group in ratings in success in teaching, and scores on the three selection procedures – personal interview, National Teacher Examination, and evaluated education and experience. This heterogeneity lends more weight to the studies of the validity of the selection procedures used.
5. A study of the relationships existing between the ratings given to ninety-three teachers by principals and supervisors and their scores on each of the three selection techniques used in the laboratory community showed that:
 - a. The interview, as carried on in the laboratory community, proved to be a fairly reliable predictor of teacher success. It was the only selection technique used which showed a highly significant correlation (.432) with teaching success as measured by ratings given over a period of time by principals and supervisors. Its validity was further evidenced by the highly significant correlation found between scores on the interview and scores given on the same form by principals who had an opportunity to observe teachers over a period of time in a teaching situation (.486). Although the correlation with teaching success is not high enough to warrant its consideration as a significant predictor of success in the case of individual candidates, it is high enough to warrant consideration as a valuable technique for selecting teachers.
 - b. Neither the Common Examination of the National Teacher Examination nor any of its component tests (Reasoning, Comprehension, English Expression, History-Literature-Fine Arts, Science-Mathematics, Professional Information, and Contemporary Affairs) showed a highly significant degree of correlation with success in

teaching as evidence by ratings of principals and supervisors. Only two of the seven parts – Reasoning and Professional Information – showed any significant relationship with the criterion. All parts were, however, positively correlated with success in teaching.

- c. The optional examination in Elementary Education (a part of the National Teacher Examinations) was shown to be significantly related to success in teaching in Elizabeth.
- d. Evaluated education and experience did not show a significant relationship (.16) to ratings in teacher success in the laboratory community. This may be due to failure to consider many valuable sources of information, or to failure to differentiate in any way on the basis of the type of preparation for teaching (general or professional), the quality of work in college or university, success in student teaching, or demonstrated competence in teaching. A more objective evaluation of professional background is needed before its effectiveness can be judged in the selected community.

260 pages. \$3.25. MicA54-1961

THE EVOLUTION OF THE REGULATORY FUNCTIONS OF THE DEPARTMENT OF PUBLIC INSTRUCTION IN PENNSYLVANIA (1834-1952)

(Publication No. 8889)

George James Fike, Ph. D.
University of Pittsburgh, 1954

The purpose of this study is to trace the evolution of the regulatory functions of the department of Public Instruction in Pennsylvania from 1834 to 1952. The term "regulatory functions" refers to the establishment of standards and the accompanying power to enforce compliance. These regulatory functions developed from: (1) legislation; (2) opinions and decisions of the Department of Public Instruction; (3) official opinions of the Attorney General; and (4) judicial decisions and interpretations of the courts. The historical-documentary method was used in this study.

The educational system of Pennsylvania developed as a result of legislation which appropriated funds for its establishment. With this development it became essential that the Commonwealth establish standards to regulate this system and provide the best educational facilities possible.

The following are the principal findings. Legal advice is given by a Deputy Superintendent in the Department of Public Instruction to whom this function is assigned by the Superintendent of Public Instruction. Technical requests and those upon which there have been no court opinions are usually referred to the Attorney General's department for his advice and

opinion. In the exercise of regulatory controls by the State Department of Public Instruction every effort has been made to allow the local administrative unit an optimum amount of freedom and responsibility in the administration and operation of its educational program. Thus, local units have been free to develop programs above minimum requirements.

To assure the health and safety of school personnel, standards for school buildings and sites have been developed. Safe transportation has been provided by establishing standards relating to school bus construction, driver qualifications, vehicular inspections, etc. School lunch programs have been designed to provide nutritious lunches for pupil personnel. Standards for vocational rehabilitation provide for the needs of all handicapped. Safety standards are prescribed which require fire prevention instruction and fire drills. Other standards are established for physical examinations of pupils and staff.

Standards have been established to assure the proper use of school finances. These standards require the auditing of school accounts and the bonding of personnel entrusted with the care of school funds. Standards also safeguard appropriations and regulate expenditures and indebtedness.

Efficient administrative management of the educational system has been the concern of the State. Therefore, regulatory standards are prescribed for the administration of the educational program. To assure adequate instructional programs, curricular standards have been developed. Standards also have been prescribed for teacher education, certification, and retirement.

The following are the major conclusions. The trend toward state control and domination of all aspects of our educational system emerged gradually from a succession of legislation and official interpretations which indicated a growing conviction that this would best serve the interests of the people. Thus the trend toward state supervision of teacher education and certification developed through successive stages until finally it became a function of the State. This exercise of state control has increased the educational services to the people in the Commonwealth through a well-organized system of financial distribution of appropriations. Thus, less fortunate sections of the Commonwealth, wherein little wealth is centered, have been able to enrich their educational programs.

The providing of rules and regulations for health and safety was not a single undertaking for any one department in the government of the Commonwealth. This was a joint enterprise in which the different departments cooperated in the establishment of standards. This cooperation has served the best interests of the Commonwealth.

241 pages. \$3.01. MicA54-1962

THE DEVELOPMENT OF THE RELATIONSHIPS OF LEGAL FISCAL CONTROLS TO THE EXTENT OF STATE AID FOR EDUCATION AS APPLIED TO PENNSYLVANIA, 1921-1953

(Publication No. 8891)

Robert David Fleischer, Ed. D.
University of Pittsburgh, 1954

The purpose of this study was to make an analysis of the development of the legal fiscal control and to show the development of the relationships of those legal fiscal controls to the extent of state aid to and on behalf of school districts as applied to the Commonwealth of Pennsylvania for the years 1921-1953.

The documentary-analytical method of research was used, documentary-analytical in that the Constitutional provisions, official state documents, and statutes were analyzed to determine the extent of state aid and the number of legal fiscal controls prevalent in the Commonwealth for the years 1921 through 1953. The step by step procedure was:

(a) Related materials were analyzed to aid in the investigation.

(b) The biennial reports of the Auditor-General to the Governor were read and analyzed for the years 1921 through 1951, and the Commonwealth's payments to and on behalf of the local school districts were listed.

(c) These amounts were adjusted, using 1935-1939 as the base years, to the Consumers' Price Indices.

(d) The State constitution was analyzed to determine those provisions related to fiscal control.

(e) The State statutes in the School Codes from 1921 through 1951 were analyzed in search of laws which had a bearing upon the fiscal control of the local school districts. Each control statute was listed on a 5 x 8 card.

(f) An analysis of the legal fiscal controls listed for each biennium was made.

(g) The number of legal fiscal control provisions for each biennium was determined.

(h) The percentage of the increase over the previous biennium for both state aid and the number of legal fiscal control provisions was determined.

(i) These percentages were ranked with the greatest percentage increase over the previous biennium ranked as number one.

(j) The relationships which developed between the amounts expended for education from state sources and the legal fiscal controls were ascertained through the use of the rank-difference statistical method of measuring correlation.

(k) The findings were summarized and the implications resulting from these findings were presented.

Calculation of rho by the method of rank-difference showed that there was no significant relationship between the amount of state aid and the number of legal fiscal control provisions. The correlation coefficients were as follows:

(a) Between the amount of current dollars (state aid) and the number of substantive legal fiscal control provisions = -.052.

(b) Between the amount of 1935-1939 dollars and the number of substantive legal fiscal control provisions = .173.

(c) Between the amount of current dollars (state aid) and the number of legal fiscal control provisions = .321.

(d) Between the amount of 1935-1939 dollars and the number of legal fiscal control provisions = .382.

Although the greatest degree of relationship was in (d), this relationship was of no significance at the .05 level.

On the basis of the findings of this study, there is no reason to believe that aid and control are inseparable. Outside factors, such as war, inflation, and depression, have to be considered in the field of control relationships between the state and local school districts.

191 pages. \$2.39. MicA54-1963

THE DEVELOPMENT OF AN INSTRUMENT TO BE USED IN THE EDUCATIONAL PLANNING OF THE CATHOLIC ELEMENTARY SCHOOL BUILDING

(Publication No. 8894)

Lawrence A. Griffin, Ed. D.
University of Pittsburgh, 1954

The purpose of this study was to determine the elements which are essential to the successful educational planning of the Catholic elementary parochial school building and to construct a guide to the planning of the program, the planning of the site, and the planning of the building, in order to aid the Catholic pastor in the execution of his responsibility to provide adequate school housing for the children of his parish.

Elements which are suggested in the planning of the public school building as contained in manuals prepared by various state departments of education, and practices in the various Catholic dioceses as outlined in letters from superintendents of schools, were analyzed and formed the base of a proposal which was submitted to a nation-wide jury of experts in Catholic school building planning for evaluation and refinement.

The status of the study is as of 1953 and the elements in the proposal were assembled from publications of 29 states and practices in 53 dioceses in 31 states. The study is limited to educational planning and does not provide for structural planning.

The jury consisted of nine Catholic school superintendents, one Public school superintendent, three architects, two contractors, two pastors, and three religious teachers. Geographically, the comments of the jury reflected thinking in the East, the Midwest, the South, the Southwest, and the Far West.

The Instrument, which was constructed as a result of the study, provides for the establishment of a

procedure in planning elementary parochial school buildings by the Bishop of the dioceses as follows:

1. Recognition of the diocesan superintendent of schools as the educational leader of the diocese.
2. Appointment of a subcommittee of the Diocesan Building Commission to be primarily concerned with school buildings.
3. Preparation of a selected list of architects who have been approved by this committee.
4. The establishment of a sequence of steps to be followed by the pastor from the initial meeting with the Bishop to obtain his approval, until the dedication of the building.

The Instrument consists of a master checklist of 17 steps to be followed in sequence and supporting checklists for each of the steps. The checklists are in the form of questions which the pastor should be able to answer before he takes each step, and materials in the form of books, periodicals, and pamphlets, are suggested as additions to his personal library to provide him with the necessary background to prepare the answers.

During the progress of the study numerous findings were made, including the following:

1. In over half of the states those engaged in public school planning received guidance in the form of printed materials available from the state departments of education, but in no diocese included in the study is such a publication available.
2. The content of the state manuals is usually suggestive rather than mandatory and the standards presented are those generally accepted by most states.
3. In many dioceses the superintendent of schools has not been delegated authority in the building phase of the educational program.
4. Better planning for school buildings exists in those dioceses where the Bishop has established a procedure to be followed in such programs.

Conclusions of the study are that the Catholic superintendents are capable and willing to aid pastors in such programs, and competent personnel is available in Catholic education for the preparation of manuals of suggested guides in planning elementary school buildings.

Areas in which future research may be necessary include determination of the essential elements in preparing for an educational survey of the parish and a study of the desirable size of the site of the entire parish plant, including the school, the church, the rectory, and the convent.

198 pages. \$2.48. MicA54-1964

FACTORS AND PROCEDURES AFFECTING THE SELECTION OF SCHOOL SUPERINTENDENTS IN PENNSYLVANIA

(Publication No. 8895)

George William Hoffman, Ph. D.
University of Pittsburgh, 1954

The purpose of this study was to analyze current methods of selecting school superintendents in Pennsylvania, determine factors affecting their selection, and make proposals for more effective selection. To obtain the information needed, questionnaires were sent to: (1) the presidents of 60 district school boards in Pennsylvania electing superintendents during the three-year period 1950-1952; and (2) the superintendents elected by those boards during the same period.

All of the superintendents included in the study possess master's degrees; and 43 per cent have doctor's degrees. Almost 80 per cent of them have been issued the secondary school principal's certificate, contrasting with the 31 per cent who hold the elementary school principal's certificate. Although teaching in a junior or senior high school is the professional experience most common to the administrators, before being elected to the superintendency, more of them hold the high school principalship than any other administrative position.

School boards and superintendents generally agree that, during the selection process, certain qualities, abilities, and recommendations do and should receive much consideration. They think that among the personal qualities the "health and energy" and "habits and general culture" of the applicants are of primary significance. Of the social qualities, leadership in community affairs and church affiliation are most important; professional training and experience lead the list of professional qualities. The ability to supervise instruction, the ability to work cooperatively with staffs evidenced in former positions, and the ability to establish good home-school-community relationships are judged to be of greatest significance. Recommendations from other administrators, from board members in the candidate's previous position, and from university and college placement services are of most value.

Eighty-two per cent of the school boards plan a series of meetings to be devoted to the selection of a superintendent, and 79.5 per cent agree that the entire board should serve as a selection committee. However, only eight per cent prepare a written statement of the educational, social, and economic conditions of the community, and somewhat more than half (54.2 per cent) formulate specifications for judging the qualifications of candidates.

To compile a list of candidates for the vacancies, contacts most frequently are made with the State Department of Public Instruction, with university and college placement services, and with persons thought to be qualified for the positions.

In 98 per cent of the districts an individual board member is permitted to question the person being interviewed. Only 36 per cent of the boards develop

a specific set of questions to be asked of the candidate, and 30 per cent set a time limit for the interview.

The following general conclusions are a result of the present study:

1. The formal training and professional experiences of most superintendents are in the field of secondary education.
2. Most of the boards follow certain well-defined procedures in board organization for the selection of a superintendent.
3. Many of the boards fail to plan effectively for the selection of a superintendent.
4. More Pennsylvania boards should know what abilities, qualities, and characteristics they want in a superintendent at the time a search for a new administrator is begun.
5. More consideration should be given to the suggestions of groups outside the board who would be interested in the formulation of specifications for judging the qualifications of candidates.
6. A thorough investigation of top candidates under consideration is made by about 70 per cent of the boards.
7. Some boards place too much emphasis upon the interview during the selection process.
8. Some means should be found to acquaint board members with desirable procedures of selection.
9. University and college placement services, graduate schools of education, and state departments of education should take a more active part in finding good prospects for the field of public school administration.

178 pages. \$2.23. MicA54-1965

AN ANALYSIS OF THE SALARIES OF SUPERVISING PRINCIPALS IN SELECTED DISTRICTS IN THE COMMONWEALTH OF PENNSYLVANIA DURING THE PERIODS 1927-1930, 1937-1940 AND 1947-1950

(Publication No. 8898)

David Paul Jones, Ph. D.
University of Pittsburgh, 1954

The purpose of this study is to analyze financial factors which affect the salaries of supervising principals and to compare these average salaries with those of teachers, dentists, lawyers, physicians, and various other employed groups.

One hundred and thirty-nine school districts, employing from 26 to 125 teachers, were chosen and divided into four groups. These districts were selected on the basis of having been in continuous existence as

supervising principalships from 1927 until 1950 and having at least 30 teachers in two of the three periods studied. Data for the assessed valuation, the debt service, the current expense, the salaries of teachers and supervising principals, and the number of years of service and training of supervising principals were transcribed from notarized financial reports on file in the Department of Public Instruction in Harrisburg, Pennsylvania. Averages per teacher were made for each of the periods 1927-1930, 1937-1940, and 1947-1950, and ranked with the average salaries of supervising principals. Correlations were calculated by means of the rank-difference method. The resulting data were listed in tables for analysis and interpretation.

In the second part of the study the average salaries of supervising principals are compared with those of teachers in the same school district, with the professional salaries next highest in amount to the supervising principal, with the incomes of those in other professions, and with the salaries of various other employed groups. The years 1927-1930 are used as a base, and the increases or decreases of average salaries in the periods 1937-1940 and 1947-1950 are calculated in terms of per cent. These per cents of difference are listed in tables for analysis and comparison. There is also examined in this section, the effect of the 1947 and 1949 minimum salary acts of the Commonwealth of Pennsylvania on the average salaries of supervising principals.

The results indicate that the average salaries of supervising principals are affected by financial factors such as high assessed valuation per teacher and high current expense per teacher; however, findings are not consistent, with the indication that these factors do not guarantee high average salaries for supervising principals. The salaries of teachers, of those in the other professions, and of various employed groups are found to have increased substantially above the average salaries of supervising principals, when the 1937-1940 and 1947-1950 years are compared with the 1927-1930 period. Great variation is found between the average salaries of supervising principals and those of professional employees receiving the next highest amounts. The minimum salary acts of 1947 and 1949 indicate a favorable influence on the salaries of supervising principals in 90 out of the 139 districts examined.

General conclusions are that the salaries of supervising principals are not commensurate with the professional competence required of educational leaders at the supervising principal level; that financial items in the school budget, indicative of ability to pay, are not matched by corresponding increases in the average salaries of supervising principals; that incomes of teachers, of those in other professions, and of various employed groups have increased above, and out of proportion to, the salaries of supervising principals. Additional salary legislation at the state level is required if the educational leadership, in the quantity and quality necessary, is to be attracted and retained in this important field of public school administration.

187 pages. \$2.34. MicA54-1966

LEGAL ISSUES INVOLVED IN THE CONSTRUCTION, OPERATION, AND PERFORMANCE OR BREACH OF TEACHER CONTRACTS AS SHOWN BY AN ANALYSIS OF AMERICAN COURT DECISIONS

(Publication No. 8899)

Harold Edward Kemper, Ph. D.
University of Pittsburgh, 1954

This is a study of the legal issues which have confronted the courts involving the construction, operation, and performance or breach of teachers' contracts of employment. The study classifies the legal issues as they relate to the problem, presents the decisions of the courts concerning them, and notes conclusions about the judicial attitude toward these selected phases of teachers' contracts of employment. The principal sources used in the discovery of these legal issues are the records of the appellate courts on construction, operation, and performance or breach of contracts of teachers.

The legal issues involved in construction, operation, and performance or breach of contracts of employment fall into four major areas for classification. These areas are:

1. The legal issues and principles concerning the construction of the contract of employment.
2. The legal issues and principles emerging from the process of operation of the contract of employment.
3. The relationship of tenure with the contract of employment; the legal issues and principles involved.
4. The legal issues and principles concerning the performance or breach of the contract of employment.

The review of the appellate court cases which are recorded in the selected areas of teacher contracts of employment shows the continued importance of the contract of employment. Contracts of employment, although regulated by statutes as to form and issuance, present issues each year for judicial ruling on the operation and performance or breach of the contract. Many of the decisions, of course, pertain to a particular state statute and the opinions would not hold in another state. However, problems that statutes can not foresee arise, and the court rulings on these issues develop principles which add to the vast amount of case law relating to school legislation and administration.

Conclusions reached from the study are:

1. The contract of employment is of initial importance to school districts and teachers. The contract of employment is the central chain which links employment, position status, and tenure enactments together.
2. Statutory enactments relating to the contract

of employment are of prime importance. They take precedence over conflicting school board rules, and are regarded by the courts as the guide posts which the contract of employment must follow.

3. Courts hold in respect the opinions of leading school authorities on school matters, and in a large degree substantiate them.
4. In establishing rules and regulations for teachers to follow in the performance of their duties under the contract of employment, boards of education are allowed wide discretionary powers.
5. While upholding statutes which permit a review of board policies by the electors of the district, courts grant wide discretionary powers to school boards, and feel that their actions should not be reviewed continually by "town meetings."
6. Courts hold that union tactics of teachers - strikes, threats of strikes, and pressure upon school boards and school board committees - are legally and morally wrong.
7. Contracts of employment which have areas of indefiniteness as to time are held by the courts to be valid contracts.
8. The contract of employment loses no importance in states which have enacted teacher tenure legislation.
9. Tenure status does not insure permanency of employment for teachers.
10. Tenure legislation in no way restricts school boards in their management of a school system other than the specific items mentioned in the tenure enactment.
11. Teachers and school boards in the performance of their duties during the period of the contract of employment must be cognizant of the rights of a third party, society. The rights of society weigh heavily in any opinion rendered by the courts involving performance or breach of the contract of employment.

181 pages. \$2.26. MicA54-1967

A CRITICAL ANALYSIS OF SELECTED RESEARCH LITERATURE ON IN-SERVICE TEACHER EDUCATION

(Publication No. 8904)

Mary Margaret Marshall McFeaters, Ed. D.
University of Pittsburgh, 1954

The purpose of this study was to make a critical analysis of the research literature relating to the in-service education of teachers and to show the origin and development of various types of in-service

teacher education over the period of years from 1919 to 1951. The investigator selected from the research literature in the field 253 representative studies which have had significant impact on the development of the problem. The types of in-service teacher education were then classified in order to make a critical analysis for the study. The data were developed by experts in the field of education, departments of state and national governments, professional associations, research students from colleges and universities, committees and commissions authorized for educational research, and individuals whose opinions were worthy of recording. Each reference was documented on a five-by-eight card, after which a chart was constructed for the tabulation of some 25 types of in-service teacher education. From this chart, tables were prepared to show the rank order and percentage of mention of the various types. Tables were also recorded from the literature, if they tended to have significant bearing upon the solution of the problem.

From the study, the writer has derived some 43 findings upon which to base conclusions. The results of the study indicated that in-service teacher education has become a planned investment which must be based on the objectives of the particular school system for which it is used, a continuous process, a democratic and cooperative endeavor, and a constantly evaluated program.

Several conclusions have been revealed through the study. Until all teachers have acquired at least a Master's degree, college courses have been predicted to be the most important and popular means for in-service teacher education. Teacher education institutions have contributed to the in-service growth of teachers by providing numerous services other than credit course programs. Such services were costly and time-consuming but have in return been beneficial to the institutions. Institutions of higher education have made great strides in removing the stigma attached to follow-up programs. Wise administrators have accepted the challenge afforded them in the use of democratic processes and procedures which permit teacher participation in all phases of the school program. Workshops have become so prominent that care must be taken to maintain the presently recognized standards. The present tendency, for teachers' professional associations, toward concerted efforts to promote professional improvements for teachers, children, schools, and communities, rather than the type of activities which in the past have gained them disfavor with administrators and boards of education, has been noteworthy. Those types of in-service teacher education of the experience nature have continued to exemplify the theory of learn-by-doing. The stimulation and encouragement of those agencies responsible for in-service teacher education have resulted in great progress in research and experimentation. The literature has revealed that teacher rating has not reached a successful status and must be more carefully employed. The types of in-service teacher education which best fit the situation, and have as their purpose that of improving the teacher in order to provide the best possible

learning situation for the children, have been indicated to be the most successful.

247 pages. \$3.09. MicA54-1968

A STUDY OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF EDUCATION IN INSTITUTIONS OF HIGHER LEARNING IN THE UNITED STATES

(Publication No. 8942)

George Wentz, Ed. D.
University of Houston, 1954

1. Purpose of Study

At least two paramount needs with respect to getting information concerning the Ed. D. degree have been manifested: (a) The need for specific information with reference to the Ed. D. degree, and (b) The need for collating such information under one cover so that it might be used in an objective way for comparative functions.

Therefore, the major objectives of this study were to meet those needs by setting up two distinctive purposes, namely:

1. The purpose to assemble information with regard to specific requirements for the Ed. D. degree in all institutions in the United States known to be offering curricula leading to the degree, and

2. The purpose to present, in outline form, as far as possible, certain data that could be used for comparisons and contrasts of requirements prevailing at the present time.

2. Procedure

Fourteen areas were sharply defined and delineated for exploration. Catalogs, printed lists, and letters were obtained from sixty-four institutions showing their current requirements for the Ed. D. degree. After an over-view of the historical background, an examination of the literature on the subject, and a consideration of significant writings, the data that were gathered from the various catalogs and printed lists were presented in outline form by state. An analysis in tabular form was included.

3. Findings

1. A state of inconsistency prevails in the objectives underlying the awarding of the Ed. D. degree.

2. At least two distinct philosophies are involved.

3. Unwillingness to modify some of the requirements have led to the establishment of the Ed. D. degree.

4. The Ed. D. degree as a professional degree has made great strides.

5. Five institutions have granted over half of the Ed. D. degrees that have been conferred.

6. The Ed. D. degree programs of today are stronger, better adapted to the needs of members of the profession, and more functional.

4. Trends

1. The demand for the Ed. D. degree as a professional degree is increasing.

2. There exists a growing flexibility with respect to the Ed. D. degree requirements.

3. Basic philosophies of the institutions are emerging in the form of verbalized statements of policy.

4. More students are demanding graduate study.

5. The number of institutions offering the Ed. D. degree is steadily increasing.

6. Industry and other such groups are taking an unusual interest in hiring holders of the Ed. D. degree.

7. There is more concern as to student-satisfaction.

8. There is a growing similarity in the Ed. D. degree requirements in all institutions.

267 pages. \$3.34. MicA54-1969

EDUCATION, HISTORY

AN ANALYSIS OF ENGLISH GRAMMAR TEXTBOOKS USED IN AMERICAN SCHOOLS BEFORE 1850

(Publication No. 8896)

Jon Reckard Huston, Ed. D.
University of Pittsburgh, 1954

Purpose

The purpose of this study is to analyze the evolution of English grammar textbooks used in American schools of less than college rank before 1850.

Data

The sources of data were the English grammar textbooks, published in the United States (or colonial America) prior to 1850, which had passed through two or more editions or printings.

Conclusions

Statements of aims were not often mentioned in English grammar textbooks before 1850.

There is much evidence that writers of English grammar textbooks were in substantial agreement about what should be included in their books. Practically all of the books were organized around several or all of the classic divisions of grammar: orthography, etymology, syntax, and prosody. The order of importance of these divisions, as shown by the number of pages devoted to each, showed considerable consistency throughout the years of the study. Etymology was the longest part of most textbooks; syntax was second in length. Prosody, which declined in popularity as rhetoric and composition textbooks came into common use, was third. Orthography, the subject matter of the spelling book, was found to occupy the least space.

While the above order of importance was maintained throughout the study, certain trends became apparent before 1850. Etymology, which constitutes 32 per cent of all the books, reached its peak in the period from 1806 to 1820 and gradually decreased in size each succeeding period until 1850. Syntax, comprising 25.1 per cent of all the books, declined after the period from 1791 to 1805. While 12.3 per cent of the total number of books combined etymology and syntax, there was a sharp increase from 5.3 per cent in the period from 1806 to 1820, to 19.5 per cent in the period from 1836 to 1850.

After 1775 there was a constant increase in the total size of English grammar textbooks, the average increasing from 127.6 pages in the period from 1776 to 1790, to 198.6 pages in the final 15-year period of the study.

In both matters of content and arrangement, the influence of British grammarians dominated American practice to such an extent that it probably could be said that before 1850 a truly American grammar of the English language did not exist.

The average number of rules of syntax for all books examined was 21.2. This compares with the 22 rules given by Murray and his followers.

Eleven kinds of teaching-learning aids were used in early English grammar textbooks. These are, in order of their occurrence: literary excerpts, prefatory remarks, questions, appendix materials, tables of contents, errata, remarks to teachers, indexes, diagrams, charts, illustrations, and remarks to pupils. Every book contains at least one teaching-learning aid; the average number per book is 3.8.

Little trend can be seen in the organization of the subject matter of English grammar textbooks before 1850. The influence of Lindley Murray, so pronounced in matters of content, was less noticeable in the arrangement of the textbooks.

Forms of content arrangement were found to include: chapters, lectures, question and answer, dialogues or conversations, parts, and lessons, each of these main headings appearing with various subdivisions.

136 pages. \$1.70. MicA54-1970

AN ANALYSIS OF HISTORY OF ENGLISH LITERATURE TEXTBOOKS USED IN AMERICAN SECONDARY SCHOOLS BEFORE 1900

(Publication No. 8907)

Helen McDonnell Neel, Ph. D.
University of Pittsburgh, 1954

This is one of a number of historical analyses of textbooks used in American secondary schools undertaken in the belief that since textbooks have been so extensively used in American education a more complete knowledge of them would contribute significant information to the history and understanding of American education.

This study, an analysis of history of English literature textbooks, discusses in narrative style and

presents in tabular form the aims, organization, contents, teaching and learning aids, and such other pertinent matters as personal biases of writers and literary style of texts. The 63-year span of the study is divided into four sub periods in order that the comparative data may be analyzed and conclusions drawn.

The textbooks analyzed are in the following depositories: the private collection of Dr. John A. Nietz, University of Pittsburgh, Pittsburgh, Pennsylvania; the Carnegie Library, Pittsburgh, Pennsylvania; The Library of Congress, Washington, D. C.; the Columbia University Library, New York, New York; the Teachers College Library, Columbia University, New York, New York; the Plympton Collection, Columbia University, New York, New York; the Public Library, Central Branch, New York, New York; and the Erie Public Library, Erie, Pennsylvania.

Among the most significant conclusions drawn from the study are the following:

1. By the close of the nineteenth century the history of English literature had been largely removed from the curriculum of the secondary school for the following reasons: its study had not achieved the expected results, the subject was found to be too difficult for secondary pupils, and through the broadening of the school curriculum a greater interest in science and the so-called vocational subjects had led to a decline of interest in purely cultural courses.

2. For the preceding reasons and others the history of English literature is now generally a part of the higher education curriculum and is almost exclusively studied in the graduate school.

3. Both the course and early textbooks of the history of English literature were borrowed from the English secondary school. This is one of the reasons that American literature was given only slight attention until late in the nineteenth century in the American secondary school.

4. The history of English literature was sometimes presented during this period primarily for its concomitant learnings such as mental discipline and ethical teaching.

5. The aims of nineteenth-century textbook writers differed from those of the present period in that they were less uniform, more idealistic, and more varied.

6. The subject matter in history of English literature texts of the nineteenth century differed from that of texts of the present period not so much in content as in emphasis, since it stressed the significance of an author as an individual rather than as a spokesman for the beliefs of the period or as a contributor to the developing culture of a people.

7. History of English literature texts of the nineteenth century were written in a style too difficult for the students for whom they were intended.

8. Nineteenth-century textbooks in this field included a greater number and a wider variety of learning and teaching aids than do textbooks written in the present period for the following reasons: early writers were less in agreement as to aims and subject matter, methods courses and textbooks in teacher education were less fully developed, and

reference materials were neither as extensive nor as available.

9. Some of the nineteenth-century writers advocated and developed educational concepts and practices which have been widely accepted in the present period. 172 pages. \$2.15. MicA54-1971

AN ANALYSIS OF THE IMPACT OF CHANGING TIMES AND AN EXPANDING NATION UPON FIVE SELECTED INSTITUTIONS OF HIGHER LEARNING FROM 1869-1917

(Publication No. 8263)

Ruth Hufford Olcott, Ed. D.
University of Houston, 1954

Statement of the Problem

This study purports to show that trends toward an expanding curriculum in Harvard University, University of Virginia, University of Michigan, University of Wisconsin, and Cornell University from 1869 to 1917 had their origin in scientific and intellectual investigation, in economic, social, and political events and movements, and in the minds of a relatively small number of foresighted educators.

Scope and Limitations of the Study

The curricula of the five named institutions only will be included in the actual study. Other institutions named will be wholly incidental, cited for purposes of illustration or historical background. The period studied covered the years from 1869 to 1917.

Sources of Data

The principle sources of data for this investigation were the catalogues and official bulletins edited and published by the universities studied. Other primary sources included: Annual reports of the National Education Association through the Proceedings published each year after the annual meeting of the Association, publications by the United States Department of Agriculture, reports from the United States Census Office, and Annual Reports from the Department of the Interior.

Inaugural addresses by college presidents and addresses by educational leaders of the day were used as sources for educational theories and practices of the era in addition to articles in periodicals of the period.

Methods of Procedure

A comprehensive survey of the history of the United States from 1869 to 1917 was made with special attention directed toward scientific, economic, and social developments. A survey of the catalogues of five selected institutions was made. Each of these institutions, in the opinion of the writer, is

representative of a type or trend of higher education during the period under consideration.

Harvard, the senior institution, represents the philosophy of education for leadership through election of subjects for study; Virginia, oftentimes called the "Model for the South," represents the philosophy of education for leadership through choice of programs of study; Michigan and Wisconsin represent the particular brand of democratic education which evolved in the Middle West; and Cornell represents the product of a generous endowment by a practical man plus the foresight of a daring scholar (Andrew D. White). The purpose of the survey of catalogues was to determine changes in and additions to the curricula during the period. Public addresses on educational questions, annual reports of progress in education, periodicals, biographies and autobiographies were investigated for data concerning curriculum changes or influences which brought about the changes. Conclusions which have been reached after a careful attempt to see relationships between the changing times and changing curricula are made. Recommendations have been made which may be of value to teachers and administrators who are presently engaged in developing adequate curricula for their institutions.

Findings and Conclusions

A painstaking examination of the curricula of the five institutions from 1869 to 1917 revealed extensive evidence that events, persons, and movements penetrated the curriculum which had been relatively common to all colleges and universities up to 1865 and which these five embraced. Without exception, the curriculum of each expanded during the period. Although there was no intent to make a comparative study of the five institutions, it was inevitable that comparisons would be noted from time to time. Differences due to geographical locations and their specific needs and problems were noted. There were a number of impressive indications that the common factor which was to be found determinative in the expansion of each institution was leadership within the institution. Evidence of the rise of technology, the advancement of science, the accretion of political and social complexities, all influencing higher education, was found in each institution, within which arose leaders to meet the challenge.

Suggested Problems for Future Research

1. Further investigation of the problem, "How much general education is necessary in a program of higher education to insure the truly educated individual?"
2. Investigation of the legislation of the first half of the twentieth century which pertained to higher education to determine the extent of its influence on the curriculum.
3. Study of the impact of coeducation upon the curriculum during the first fifty years of the twentieth century.
4. Study of reciprocal activity between research

departments of colleges and universities and industry and business.

5. Investigation of institutions of higher learning, the enrollment of which includes minority groups, to determine what influence the needs peculiar to those groups may have had upon the curriculum.

6. Study of Extension Departments from the standpoint of how the communities, industries, or schools served by extension services may have influenced the curriculum building of the institutions serving them.

275 pages. \$3.44. MicA54-1972

EDUCATION, PSYCHOLOGY

PERSONALITY CORRELATES OF COLLEGE ACHIEVEMENT AND MAJOR AREAS OF STUDY

(Publication No. 8229)

Lewis William Field, Ph. D.
University of Houston, 1954

The present study was concerned with identifying personality correlates of college achievement and major areas of study. Specifically it was an attempt to demonstrate that high and low achievers in college and successful physical and social science majors can be differentiated on a series of personality measures, which point to a distinct personality constellation for each group.

A population of 125 recent college male graduates was recruited for the present study. From this group eighty-five subjects met preliminary criteria of age (range 18 to 32), intelligence level (100 to 135 I. Q.), and complete test results. This sample was subdivided into two major groupings on the basis of explicitly defined criteria.

The first grouping consisted of twenty-nine high achievers and twenty-nine low achievers, matched on age, I. Q., and major field of study. The high achievers were in the top third of the sample on grade point average, and the low achievers were in the bottom third.

The second grouping consisted of twenty-nine physical science majors and twenty-nine social science majors, matched on age, I. Q., and total grade point average. The physical majors were in the top third of the sample in grades and semester hours taken in the physical sciences, while they were in the bottom third of the sample in grades and semester hours taken in the social sciences. The social majors were in the top third of the sample in grades and semester hours taken in the social sciences and they were in the bottom third of the sample in grades and semester hours taken in the physical sciences.

The testing techniques included five personality measures, a perceptual task, an attitude scale, and seven measures of identification with the father figure.

For personality measures a self-concept test was used which was designed to measure five source traits isolated from a series of factor analyses of surface traits. These source traits were: Social Adaptability, Emotional Control, Conformity, Inquiring Intellect, and Confident Self-Expression. This test utilized a Q-sort technique in which subjects were required to sort one-hundred statements about themselves into eight piles from least characteristic to most characteristic.

The perceptual measure was a Judging of the Squares task. This task required the subject to judge the sizes of a continuous series of squares projected on a screen one at a time in random order. As the task progressed the squares were gradually increased in size. This technique gave rise to three scores based on a "leveling-sharpening" dimension, defined as sensitivity to changes in perceptual environment.

As an attitude measure the F-Scale was used in its standard form.

A modification of the Strong Vocational Interest Blank and the Blacky Pictures were used to measure two levels of identification.

The Strong Inventory was answered once by the subject following standard procedure. Then he filled it out as he believed his father would. A measure of perceived similarity or "conscious identification" with the father was the percentage of agreement between the two Strong's.

Six measures of disturbance in identification were derived from the Blacky Pictures. These included the four cards on Oedipal Intensity, Castration Anxiety, Identification Process, and Ego Ideal. The fifth score was the total of these four cards. A sixth measure was the total of the spontaneous story scores on the four cards.

All subjects were tested in two two-hour sessions in small groups ranging in size from two to eight.

The results were as follows:

1. High achievers made significantly higher scores on the following personality measures: Conformity, Inquiring Intellect and Confident Self-Expression. They also made reliably higher scores on the F-Scale (more "liberal") and on the Strong perceived similarity measure. There were no significant differences between high and low achievers on Social Adaptability, Emotional Control, the leveling-sharpening perceptual scores and the Blacky measures of disturbance in identification.

2. Physical science majors made significantly higher scores in two of the personality measures: Emotional Control and Conformity. They also were significantly higher in all three perceptual measures ("sharpeners"), whereas their score on the F-Scale was reliably lower (more "authoritarian"). In the identification measures, physical science majors scored significantly higher in perceived similarity. They showed significantly less disturbance in identification with lower scores on the Oedipal Intensity Card and Spontaneous Stories. There were no reliable differences between physical and social science majors on the following measures: Social Adaptability, Inquiring Intellect, Confident Self-Expression.

3. Intercorrelations between all the measures were carried out within the high-low group, within the physical science group, and within the social science group. The measures were correlated separately for the physical and social majors because plots of the regression lines for the groups showed them to be distinctly different.

Among the intercorrelations which showed consistent relationships in the three correlational matrices were the following:

- a) A positive relationship between the F-Scale and the Otis I. Q. The more liberal the higher the I. Q. in all three groups.
- b) A negative relationship between the F-Scale and disturbance in identification on the Blacky. The greater the disturbance in identification, the more authoritarian in all three groups.
- c) A positive relationship between Confident Self-Expression and I. Q. The more confident in self-expression, the higher the intelligence level in the high-low and physical science groups.
- d) In the social science group, there were positive relationships between disturbances in identification on the Blacky and Emotional Control and Inquiring Intellect. There was a negative relationship between Conformity and disturbance in identification on the Blacky.
- e) In the physical science group, there were negative relationships between disturbance in identification on the Blacky and Emotional Control and Inquiring Intellect.

211 pages. \$2.64. MicA54-1973

AN INVESTIGATION OF THE ABILITY OF SUPERVISORS TO PREDICT RESPONSES OF THEIR SUBORDINATES

(Publication No. 8044)

Rossall James Johnson, Ph. D.
Purdue University, 1954

Major Professor: H. H. Remmers

A research problem in applied psychology in which the supervisors' and subordinates' ability to predict the responses made by the other are investigated. The study also probed into certain correlates of the ability to predict, such as, supervisory ability and morale.

The problem was set up by expressing four main hypotheses and six related hypotheses. Data were obtained from two companies. Company A was a paper box manufacturing company. Ten supervisors and 97 subordinates made up the sample. Company B was a mail order house from which 15 supervisors and 130 subordinates were used in the sample.

The Pearson coefficient of correlation for the relationship between the group scoring method and the individual scoring method, when calculating supervisor predicting ability, was +.56.

There was a strong indication (significant difference

at the 1% level) that if the supervisor could predict the subordinate's response, the subordinate could predict the supervisor's response. A significant Pearson coefficient of correlation was found between the prediction score of the subordinate and the prediction score of the supervisor for that subordinate.

A significant difference was found between the ability of good supervisors to predict the responses of their subordinates and the ability of poor supervisors to predict their subordinates' responses.

The ability of high morale subordinates to predict the responses of their supervisors was found to be significantly higher than the ability of low morale subordinates. The morale score of those subordinates who predicted their supervisors' responses best was higher than those subordinates who had the least success in predicting the responses of their supervisors.

No significant difference was found between morale scores of subordinates whose supervisor predicted their responses best and morale scores of individuals whose supervisor least successfully predicted their responses.

The morale score of the subordinates of good supervisors was not significantly different from the morale score of the subordinates of poor supervisors. No significant difference was found between the abilities of good supervisor subordinates, as a group, and poor supervisor subordinates, as a group, to predict the responses of their respective supervisors.

The good supervisors made significantly higher scores on the How Supervise? test than did the poor supervisors.

96 pages. \$1.20. MicA54-1974

A COMPARISON OF TWO KINDS OF TEST-INTERPRETATION INTERVIEW

(Publication No. 8770)

Lyle Barton Rogers, Ph. D.
Columbia University, 1954

The problem was to determine whether two different methods of presenting test data in a vocational counseling interview would produce distinguishably different results in their effect upon the self-understanding of the clients. It was hypothesized that a "self-evaluative" method, in which non-test data are surveyed before test results are introduced into the discussion and in which client participation is encouraged, would prove to be more effective than a "test-centered" method, in which the test profile is explained in detail but in which no particular effort is made to stimulate client participation in the discussion or to bring in non-test data.

The test-centered method (Method A) was used with forty-one men college students; the self-evaluative method (Method B) was used with fifty-three. All subjects had taken the same battery of achievement, aptitude and interest tests. The two sets of

interviews were shown to be different through analysis of typescripts of a recorded sampling.

Each subject rated himself on various abilities and interests measured by the tests and on his suitability for each of twenty-two vocations, using a specially-devised rating scale, once, before testing and counseling and again, about a month after the interview. The investigator, using the same rating device, rated each subject both before and after the interview.

Each student self-rating was scored twice, once with the investigator's pre-interview rating as a scoring base, and once with the investigator's post-interview rating as a scoring base. The scores so derived were called "self-understanding scores". Differences between the interview groups in mean self-understanding scores were not significant. Significant though small gains in self-understanding (lower scores) between pre-interview and post-interview self-ratings were observed for both groups. Gains in accuracy of self-rating of abilities and interests were significant, but they were not significant in the case of the vocational suitability ratings.

The self-ratings were re-scored, including in the scoring only those items which showed significant movement between the two markings. Here, again, no significant differences between interview groups were found. Gain in self-understanding for both groups was found to be more clearly significant than was the case when all items were used in the scoring.

Those of highest and those of lowest intelligence in each interview group were compared as to mean self-understanding score and as to change in score between ratings. The more intelligent of both groups improved (lowered) their scores significantly. The less intelligent did not. However, since the more intelligent and the less intelligent of the self-evaluative group did not differ significantly from each other in the matter of score change, whereas the two subgroups of the test-centered interview group did differ in this respect, there is some justification for believing that the self-evaluative interview works better with college students generally without regard to intelligence.

Clearly active participators in the self-evaluative interview group made significant improvement in the accuracy of their self-ratings. The active participators in the test-centered group and the non-participators in both groups failed to make significant improvement.

Conclusions

1. The self-evaluative interview method is not clearly more successful than the test-centered interview in presenting test data in vocational counseling.
2. Both methods appear to contribute to improved self-understanding among the clients, at least with respect to abilities and interests.
3. Higher intelligence and active participation in the interview are probably factors contributing to client growth in self-understanding. The

self-evaluative type of interview is possibly more successful with college students generally, without regard to intelligence. The client will be more likely to benefit from active participation in the interview when it is of the self-evaluative type.

86 pages. \$1.08. MicA54-1975

AN ANALYSIS OF TEACHERS' INTERPRETATIONS OF STATISTICAL AND PSYCHOLOGICAL TERMS FOUND IN CERTAIN PROFESSIONAL PERIODICALS

(Publication No. 6124)

James Green Snowden, Ed. D.
Indiana University, 1953

Chairman: William H. Fox

Any generalized definition of education has always included as a fundamental assumption that some change or changes take place in the learner, and the perennial problem for all educators has been the manner in which desirable changes occur most efficiently. Teacher-training institutions have tried to include as a major objective of their training programs, a constant intellectual contact with the changing developments within the various fields of the prospective teacher. One of the most effective means of accomplishing this objective has been provided through the many educational periodicals and professional journals which are published for the in-service training of teachers.

This investigation is concerned with the degree of comprehension teachers have of certain types of words and phrases they find in these education journals: namely, words of a psychological and a statistical nature. It is on the assumption that an analysis of teacher comprehension of these words found in the journals will be indicative of the journal's real value to the teacher that the present study claims its contribution to the larger question of the general quality of teacher training.

The Problem

The problem is: first, to determine what journals would probably be read most often by Indiana high school teachers; second, to determine what statistical and psychological terms are most widely used in these journals; third, to construct a measuring instrument with which teacher reactions to these word meanings may be compared and evaluated; and fourth, to determine the significance of the teachers' responses. The principal aspect of the problem is to determine whether comprehension of statistical and psychological terms by teachers is differentiated by sex, age, teaching field, teaching experience, academic training, type of institution attended, and recency of summer school attendance.

Procedure

A new-type objective test which purports to show a continuum of successful responses in terms of the various teachers' understanding of certain statistical and psychological terms and concepts was constructed. This test was derived from terms found in five major education journals selected by leaders in the field of secondary education as the ones that secondary teachers would most often read. Approximately 5 per cent of the high schools in Indiana were selected at random, and from these schools, the test was administered to 389 teachers. Appropriate statistical procedures were applied in order to properly interpret the test scores.

Major Findings and Conclusions

A brief summary of the findings and conclusions follows: The analysis of the ability of the sample of teachers to comprehend statistical and psychological terms found in education journals revealed relatively few significant differences, and these differences appeared only on the statistics portion of the test.

These differences were between the following groups:

- (1) Men scored significantly higher in statistics than did women.
- (2) Those with over 4 years of college training scored significantly higher in statistics than did those with 4 years and less college training.
- (3) Those with Master's Degrees and more scored significantly higher in statistics than those having less than the Master's Degree.
- (4) Those attending universities in Indiana scored significantly higher in statistics than those attending any other type of institution at any location.
- (5) Those attending universities outside Indiana scored significantly higher than the group attending Indiana teachers colleges.

Over 20,000 instances of words relating specifically to psychology and statistics are included annually in articles appearing in the following journals which were selected by leaders in the field of secondary education as the journals Indiana high school teachers would probably read fairly regularly: The NEA Journal, The Indiana Teacher, School Review, Clearing House, and School Life.

The writer believes that the great importance of word comprehension and vocabulary development to teachers must be reemphasized. The training period of the prospective teacher is the logical time to present experiences which foster this type of educational growth. In the opinion of the writer, this aspect of the teacher's training has been somewhat neglected, and as a result, some of the potential value of the teacher to society is not being realized.

160 pages. \$2.00. MicA54-1976

EDUCATION, THEORY AND PRACTICE

ABSTRACTION AND CONCEPT FORMATION
IN THE FIELD OF SECONDARY
SCHOOL MATHEMATICS

(Publication No. 8661)

Karmi Friede, Ph. D.
Columbia University, 1954

This study is an investigation into the understanding of the mathematical concepts Zero, Equality, Relation, Identity and Equation by secondary school students (9th-12th years of study).

The study involved the analysis of two questionnaires administered to the secondary school students, group discussions, and interviews of individual students.

Information about the following issues was sought in the analysis of the responses:

- 1) The various approaches of the students to the understanding of each of the respective concepts.
- 2) Indications as to the nature of the process of concept formation.
- 3) Indications as to the nature of symbol-designatum affinity.
- 4) Indications as to the ability to abstract in the realm of mathematics.

The analysis of the responses also provided an opportunity for getting information about:

- 5) Some aspects of the logical reasoning of the students.
- 6) The existence of certain relations between some characteristics of the process of concept formation and the modes of explanations of the concepts by the students.

The analysis of the responses led to the following conclusions:

- 1) Some secondary school students maintain their naive and primitive childhood understanding of some of the concepts. In some cases students associated the meaning of terms on accidental grounds with some of their experiential situations. Students responded automatically with concepts in problematical situations, and sometimes even by relinquishing of the proper meaning of the concepts. Dynamic aspects of situations were found to be very appealing to students not only in the sense that they were easily felt and grasped, but also in the sense that operations were permitted or prohibited by students according to the ability or inability of these operations to cause changes.

- 2) Some students had context-constancies and not concept-constancies in the sense that certain terms were understood in terms of certain contexts. Some students explained the concepts by furnishing only concrete, specific examples, giving rise to doubts of whether they had grasped the general character of the concepts. Some students had difficulty differentiating a conceptual configuration and identifying the exact designatum of the concept in the configuration. In these cases the students indicated the totality of the undifferentiated configuration. The difficulty of differentiations was especially conspicuous with

relation-concepts. In these cases, the students had difficulty dealing with the relations between the objects, and instead they dealt with the related objects. The ability to function intelligently with a concept was not found to be a necessary concomitant of the understanding of that concept.

3) There were clear indications of the difficulty for some students of differentiating between the symbol-designatum relationships. Thus, traits related to the designatum of a concept were related to the symbols or to the concepts.

4) There were explicit indications of the difficulty for some students of dealing with general and abstract concepts. The ability to abstract was found to improve with age. It was also found that configurational qualities are not abstracted automatically through actual practice with them. A kind of guidance to their abstraction is needed.

5) Students made logical mistakes concerning the universal quantifier "all" and the double negations of statements. Students judged the prohibition or permission of a process from a very realistic and utilitarian point of view, namely, because of its worthiness and the changes that it affects.

6) Some of the explanations were incompletely phrased indicating the totality of the undifferentiated conceptual configuration, and the incompleteness of the answers may indicate the incompleteness of the process of differentiation.

229 pages. \$2.86. MicA54-1977

IDEOLOGICAL ELEMENTS IN THE DEVELOPMENT OF THE AMERICAN YIDDISH SCHOOL MOVEMENT

(Publication No. 8662)

Harry Gersh Garfinkle, Ph. D.
Columbia University, 1953

In the last half of the nineteenth century the Russian and the Austro-Hungarian Empires began to be industrialized, and the social ferment among their peoples also increased. New ideas - democracy, socialism, nationalism - long since current in Western Europe, began to command a following. These new ideas also found adherents in the Jewish communities of Eastern Europe. By 1897, three distinct Jewish political movements had emerged. These were the Zionist, the Bundist, and the Diaspora Nationalist movements; and each claimed that its program of social action would best serve the needs of the Jewish people.

After the Kishinev pogroms of 1903, many of the supporters of these movements came to America. Here they discovered that values other than their own prevailed in both the American and the Jewish community. They tried, however, with every means possible, to intensify the national-cultural and the socialist consciousness of the Jewish people. To do this, they had to oppose the existing Jewish religious and radical cosmopolitan leadership and to run contrary

to the Americanization ideals which the American public school held up before the immigrants' children. They did so through the medium of the press, their political parties, their cultural and fraternal organizations, and perhaps most importantly, through the establishment of children's schools of their own; and in this way, the national radical groups won a place for themselves in the American Jewish community.

From 1910 to 1918, the ideological lines of their supplementary Yiddish and Yiddish-Hebrew schools began to take on a distinct form. During this period, the Federation of National Radical Schools, embracing at its height some forty schools, was the coordinating body of the movement. Some were supported by the Poale Zion and the Jewish National Workers Alliance, some by the Socialist Territorialists and the followers of Dr. Chaym Zhitlowsky's Diaspora Nationalist position, while many were maintained by committees composed of all the nationally and socially oriented people in the Jewish community.

In 1918, a group of teachers with a non-partisan Yiddish cultural orientation organized some old and some new schools into the Sholem Aleichem Folk Institute. In the same year, the Workmen's Circle decided to found Yiddish Socialist Schools of its own, and in a few years its movement became the largest in the field. In 1926, a group of dissident and Communist-oriented members broke away and established the Non-Partisan Jewish Children's School; four years later, these new schools were taken under the wing of the International Workers Order. In 1932, the Left Poale Zion Party opened a Marxist-Zionist school of its own, and the roster of politically supported Yiddish-language children schools was complete.

The depression, the impact of Nazism on world Jewry and the growth of the Zionist movement then led to a change in emphasis in the programs of all the schools. The Socialist elements in their curricula were gradually subordinated to the Nationalist elements, and more time was given over to the traditional content of a Jewish education. The Bible, the Jewish holidays, customs and beliefs, and the Hebrew language, all received more attention. All five school groups now set themselves the task of developing the Jewish culture, making the children in their schools proud of their heritage as Jews and as Americans, and training them to take part in the movements in Jewish life dedicated to maintaining it on a progressive democratic cultural basis.

In the maintenance of their privately supported supplementary, but in a few cases all-day, schools on a national-cultural or a national traditional foundation, the supporters of these Yiddish schools have also now set a precedent in the American Jewish community which bids fair to have far-reaching consequences. Some of the Conservative Jewish elements despairing of the fruits of a short supplementary program of Jewish education may in time decide that they, too, will conduct a separate modern Jewish-American school system in which, along with the general American studies, due consideration will be given to subjects pertinent to modern Jewish life and culture.

The questions whether the American public schools themselves will in some way incorporate those elements of the Jewish culture which are now excluded on the grounds of "religion", and whether the present trend towards religious segregation will be reversed still remain to be answered.

345 pages. \$4.31. MicA54-1978

BELIEVING IN ACTION: A STUDY IN THE DYNAMICS OF EDUCATIONAL RECONSTRUCTION

(Publication No. 8714)

Ronald Brain Levy, Ph. D.
Columbia University, 1953

This is a study of the process of believing and its relationships to the improvement of education. The central thesis of the study is that a sound educational program must be built on a set of explicitly stated operational beliefs. In order to function in periods of cultural change these beliefs must be produced and modified by a well-balanced process of believing. It is the description of the construction and operation of this process with which the major part of this study is concerned.

The study is built around certain parts of the writings of Charles Sanders Peirce, an early American pragmatist. The study starts with an exposition of Peirce's ideas on doubt, thought, belief, and action. Peirce's ideas are compared to those of Dewey, Mead, and others and then expanded so as to be more clearly adaptable to the purpose of the study.

The study next turns to the writings of several earlier philosophers - Tertullian, Augustine, Aquinas, Pascal, and William James. This section shows how beliefs have changed since medieval times and how these earlier beliefs have a useful content to contribute to the construction of a flexible believing process. The name "believing construct" is given to this process, since it is both constructed and reconstructed continually, and is also used itself to construct beliefs.

The study continues by describing the normative sciences - logic, ethics, and esthetics - and Peirce's treatment of them. It is the purpose here to show the relationships between the normative sciences, and also to show how these sciences may be useful in the design of the believing construct. It is found that ethics is the central normative science which deals with the focus of action in the moral realm of experience. Logic and esthetics are sciences which draw relationships between this focus and the surrounding potential moral realm of experience.

This treatment of the normative sciences is followed by a description of certain factors in our culture with which the believing construct must deal if it is to operate effectively in the present. In order to describe how these cultural factors affect the construct, the function of the normative sciences in such a context is thoroughly delineated. The structure of belief in general is also considered. It is found that

the normative sciences should have a social basis in order to be maximally effective now. Beliefs are also most effective when they are designed and structured around three sets of polar qualities - individual - social, scientific - mythical, expectative - spontaneous.

Finally the study shows the meaning of all of the above for education and educational institutions in the contemporary social scene. This is done in several areas of education. First there is a description of "believing-centered" education and the general characteristics it must have. This is followed by a treatment of the teacher's role, the curriculum, and the relation between school and community in believing-centered education. In all of the above it is found that social processes and social dynamics are of central importance and must be dealt with intelligently if believing-centered education is to become an active reality. Furthermore educational action must become a part of social action and stimulate the production of social change.

189 pages. \$2.36. MicA54-1979

SIGNIFICANT MATHEMATICS IN THE EDUCATION OF COAL-MINE SUPERVISORS

(Publication No. 8737)

Paschal Michael Peter Mino, Ph. D.
Columbia University, 1953

This study arose from a desire to advance the training of coal-mine supervisors. In the past, many lives and much coal has been lost because of poor supervision. The need for better-trained supervisors has been openly expressed by leaders in mining. The mechanization of mines demands a considerable increase in supervisory personnel.

The purpose of this research is to determine what mathematics is significant in the training of coal-mine supervisors.

The investigation consists of: an analysis of 1424 mathematical problems extracted from 204 supervisory qualifying-examinations to learn what mathematics was needed to pass these examinations; an analysis of 98 questionnaires from supervisors to learn what mathematics was used by them in their work; an analysis of the qualifications and duties of supervisors that call for an understanding and use of mathematics; and an examination of two of the more prominent coal-mining periodicals to determine the mathematics required to read intelligently reports on recent experiments and improvements in coal mining.

Any mathematics concept, operation, or relationship that was found in the analysis of the qualifying examinations was considered necessary for this kind of education, because a supervisory candidate is not permitted to function until he passes such examinations. Any mathematics item found in the upper nine-tenths of an ordered descending-frequency list in any of the three remaining classifications was considered

sufficient. Any mathematics item that satisfied the above-mentioned criteria of necessity and sufficiency was considered significant in the education of coal-mine supervisors.

The mathematics that was found significant in this study consisted, essentially, of the concepts and use of fractions, decimals, ratio and proportion, cost, percentage, rate and time, mensuration, elements of algebra requisite for the derivation and use of simple formulas, graphs, powers and roots to the fifth order, angles, and fundamental trigonometric functions. Mensuration included knowing what is a square, rectangle, trapezoid, circle, and types of triangles; how to find the perimeter and area of each; how to find the volume of prisms which have these geometric figures for their base; and a knowledge of simple geometric concepts as parallel lines, perpendicular lines, diameter, radius, and chord of a circle. The elements of algebra comprised, particularly, the knowledge and use of the laws of exponents, transposition of terms, substitution of known and unknown quantities in an equation, simplification of complex fractions, and solving for a desired quantity. Among the six elementary trigonometric functions, the sine, cosine, and tangent were the most used.

The reading of mine maps, which received the highest score on the questionnaire and ranked rather high among the significant mathematics for mining supervisors, is not given any exposition in most of the manuals written specifically for the education of mine supervisors.

The majority of the responding supervisors advised teaching the use of a transit to future mine foremen. The theory and use of a transit, mine-map reading, and efficient methods of solving problems of involution and evolution beyond the second order should be given particular attention in this learning.

This kind of education would also benefit prospective supervisors of underground ore, stone, and clay mining because they have problems common to coal-mining.

This study has shown the need for improving and expanding coal-mine supervisory education, determined the significant mathematics for it, gave recommendations to improve this learning, and provided a large number of classified mining problems for possible use in physics, chemistry, and trigonometry classes for mining students and for enrichment of mathematics problems for non-mining students.

205 pages. \$2.56. MicA54-1980

EDUCATION, VOCATIONAL GUIDANCE

JOB ADJUSTMENT OF BEGINNING OFFICE WORKERS IN SELECTED BUSINESSES IN METROPOLITAN NEW YORK

(Publication No. 8749)

Mary Ellen Oliverio, Ph. D.
Columbia University, 1954

The purposes of this study were to find out: (1) the attitudes of young female office workers toward a variety of factors that might contribute to adjustment on the job; (2) the opinions of supervisors concerning the work of these young office workers; and (3) factors that contribute significantly to job adjustment among young workers.

Interviews with 196 beginning workers and with supervisors of 174 of these workers in 24 businesses provided the data used to determine the job adjustment of the girls who composed the sample. Criteria of job adjustment were based on the opinions of 15 experienced directors and assistant directors of personnel. The criterion items were: (1) attitude toward cooperativeness of fellow workers; (2) attitude toward how much confidence the supervisor had in worker's ability to do the job; (3) ability to do the job (as evaluated by the supervisor); and (4) expression of satisfaction with the job.

On the basis of these criteria the young workers were divided into two groups. Those who had scores above the mean of the group were considered better adjusted to their current jobs than were the girls with scores below the mean. The two groups were designated as the "better adjusted" and the "less well adjusted." There were 94 girls in the former group and 102 in the latter group.

Hypotheses formulated considered the relationships between adjustment and 36 variables. Certain variables differentiated significantly between the two groups. Other variables showed a difference in the hypothesized direction (that is, better adjusted girls expressed the positive attitudes more frequently than the less well adjusted girls), but the differences were not statistically significant.

The Chi-square technique with a 5 per cent level of significance was used to determine the validity of the hypotheses formulated.

FINDINGS

The variables that discriminated between the better adjusted and the less well adjusted girls cluster around two factors in the total work situation. The first is the feeling of belongingness and the second is the importance of the job itself. The well adjusted girl in asserting that her company is interested in her as an individual, that promotional opportunities are good, and that her job is secure is identifying herself with the entire organization. When she rates her job high in terms of responsibility, initiative, variety, utilization of high school training, and appropriateness she is indicating that she values her job in a positive manner. Furthermore, the better adjusted girl receives higher ratings in respect to

satisfaction and qualifications by her supervisor than does the less well adjusted girl. The less well adjusted girl, on the other hand, has little feeling of belongingness in the work environment. She evaluates her job in a negative fashion and believes it is low on many counts.

Several other differences were observed which were not large enough to be statistically significant at the 5 per cent level. Over a third of the girls in the better adjusted group felt their salaries were higher than they would be in other companies while less than a fourth of the less well adjusted girls expressed the same belief. The better adjusted girls evaluated their academic averages during high school higher than the less well adjusted girls. The

girls who scored low on adjustment expressed the desire for further education more frequently than did the girls who scored high on adjustment. More of the better adjusted girls than of those less well adjusted stated that they would continue to work after marriage.

Extent of high school business training, family attitude toward job, amount of supervision received, need for further training in present job, presence of orientation period were the only variables investigated on which there were no differences observed between the better adjusted and the less well adjusted girls in this sample.

99 pages. \$1.24. MicA54-1981

ENGINEERING

ENGINEERING, CHEMICAL

THE CHEMICAL ENGINEERING KINETICS OF TERTIARY BUTANOL DEHYDRATION

(Publication No. 8878)

James Hay Black, Ph. D.
University of Pittsburgh, 1954

A major problem in chemical engineering today is the proper design of industrial-scale chemical reactors. While much progress has been made in the field of chemical kinetics, the problem remains of simple and generally-applicable methods of designing industrial reactors from pilot-plant data.

The purpose of this work is to develop a correlating equation for the kinetic data from tertiary butanol dehydration. Correlation of data from this type of reaction, involving as it does both a heterogeneous mechanism and a volume change, has heretofore been difficult.

An extensive search of the literature was made to find a reaction system which was easily analyzed and uncomplicated by interfering side reactions so that the effects of variations in flow rate, catalyst bed height, and temperature on conversion could be clearly studied. The catalytic dehydration of tertiary butanol was found to meet these requirements.

The investigation was carried out in a fixed-bed catalytic reactor operated at three different temperatures, over a flow rate range of 0.7 to eight ml. of liquid per minute, at bed heights varying from one to four inches, and with both pure and diluted feed. The total reactor throughout was collected and analyzed for both water and isobutylene.

The results show that the height of a reactor unit concept has been extended to cover the case of a heterogeneous reaction of overall fractional order.

Six conclusions can be drawn from this work.

1. This study presents for the first time a unique chemical engineering method of correlating data from heterogeneous reactions involving a volume change.

2. Whereas previous work has provided means for treating homogeneous reactions of first and second order and for treating heterogeneous reactions of first or pseudo-first order, this investigation has resulted in a new application of the height of a reactor unit concept to the much more common case of heterogeneous reactions of fractional order.

3. This study has demonstrated that the tertiary butanol dehydration reaction has an overall order of 0.615 over the conversion range from zero to 95 per cent, the conversion range of greatest industrial importance.

4. It has been possible, by the method presented

here, to show that the natural logarithm of the reaction constant is a linear function of the reciprocal absolute temperature over the 100-degree range studied, a relationship of great convenience in interpolating reactor performance within this temperature range.

5. From data taken at different catalyst bed heights, this investigation provides proof for the first time that it is possible to predict for this system, with excellent results, the conversions to be expected at any given bed height. It is reasonable to assume that this method is applicable to similar dehydration reactions in which side reactions are minimal. This study provides the development engineer with a useful tool for reactor design and presents a method by which the required pilot-plant data can be minimized.

6. This study shows that for this system the simple height of a reactor unit equation presented here correlates data from a heterogeneous reaction of overall fractional order over substantially the entire range of conversions, over a fourfold change in bed height, over a tenfold change in flow rate, over a 100-degree temperature range, and for both pure and diluted feed. 113 pages. \$1.41. MicA54-1982

DESIGN, OPERATION, AND PERFORMANCE OF BENCH-SCALE REACTORS

(Publication No. 8581)

John Robert Snyder, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. P. F. Hagerty

Four different methods for applying agitation to bench-scale reactors have been studied; shaking or rocking the entire vessel, and dashing or rotating an impeller. The reactor volumes varied from one-half liter to one gallon. The design, operation, and performance of these reactors were developed on the basis of two chemical reactions. The first reaction was the hydrogenation of nitrobenzene in acetic acid (solvent) with a palladium-on-charcoal catalyst. The second reaction was the oxidation of a sodium sulfite solution with pure oxygen in the presence of a cupric-ion catalyst.

Results of this study indicate: (1) reactors agitated by dashing or rotating impellers can be made to excel the shaken or rocked ones; (2) it is possible to correlate the performances of these four different bench-scale reactors; (3) plant-scale performance should be predictable from controlled bench-scale results.

A new design of rotating gas-pumping impeller was developed. Performance and design data for this impeller are presented. The ability of this impeller to recycle and disperse reactor gases efficiently should make it useful in applications involving both chemical and physical processes.

134 pages. \$1.68. MicA54-1983

ENGINEERING, CIVIL

THE EFFECT OF AN ACOUSTIC MEDIUM ON THE DYNAMIC BUCKLING OF AN INFINITE ELASTIC PLATE

(Publication No. 8650)

Frank Louis DiMaggio, Ph. D.
Columbia University, 1954

An infinite elastic plate is referred to a rectangular coordinate system in which the x - z plane is the middle plane of the plate. The plate is assumed to have a small initial curvature independent of z . At equal intervals ℓ on the x axis it is supported along lines parallel to the z axis. An infinite body of acoustic fluid, i.e., one whose motions conform to the linear theory of waves of expansion, occupies the space $y \geq 0$. It is assumed that at time $t = 0$, the plate is in a uniform state of compressive stress N_x . A mathematical study is made of the dynamic response of the plate for $t > 0$ if the plate stress N_x is greater than the buckling stress and remains constant with time.

By means of Laplace transformation, the fluid velocity potential is eliminated between the simultaneous differential equations which couple the response of the plate and fluid. The resulting transform of the plate displacement is inverted by integration in the complex plane, yielding residues and branch integrals. It is shown that the contribution of the residues represents the asymptotic solution for large values of t .

One purpose of this paper is to explore the possibility of making simplifying assumptions in actual physical problems. It is first found that if the compressibility of the fluid is neglected, the effect of the fluid is entirely accounted for by adding a "virtual mass" of fluid to the actual mass of the plate. This incompressible solution is always a lower bound for the exact solution. For certain combinations of the non-dimensional parameters of the problem it is shown that the residues of the transform solution can be well approximated by the incompressible solution.

A solution valid for small values of t only is obtained by means of an approximation previously employed by Bleich and Mindlin.

By a numerical example, it is shown that for steel plates in water, with dimensions usually encountered in ship structures, the non-dimensional param-

eters are such that the compressibility of the water can be neglected; the "virtual mass" concept is sufficient to study the motion.

47 pages. \$1.00. MicA54-1984

ENGINEERING, INDUSTRIAL

CERTAIN OPTIMUM CRITERIA IN TELECOMMUNICATION SYSTEM PLANNING

(Publication No. 8761)

Zvi Prihar, Eng. Sc. D.
Columbia University, 1954

The thesis presents a number of procedures for a systematic determination of optimum characteristics in telecommunication system planning.

In Part I, which serves as a general introduction, the telecommunication system concept and the technological and economic considerations involved in the planning are analyzed and discussed. A number of economic peculiarities of Telephone Concerns are pointed out and a solution is suggested for a possible equalization of traffic loads with a view to improving the present low utilization efficiency of telecommunication plants. The analysis is supplemented by a number of diagrams.

Part II deals with Cable Networks. The determination of economical cable capacities is treated as an Inventory problem and expression is derived giving the most economical cable size as a function of the latent number of subscribers, cable cost and possible profit. Inhomogeneous subscriber growth in an area of unequal densities is considered and a formula is deduced expressing the most adequate subscriber charges as functions of plant cost, life, subscriber growth and interest. A method is developed for the determination of the most economical location of a cable distribution point or exchange, resulting in a lowest cable cost, in the case of a network of unequal cable capacities. This is followed by the formulation of a mathematical expression, based on the electric dipole analogy, giving the cost of a displacement from the most economical location in terms of the displacement length and the average cable length. Part II also deals with the Decentralization Problem and the economic justification for satellite exchanges. Corresponding economic limits are determined and analyzed. A criterion is also formulated for the most economical connection of a subscriber in a multi-exchange area. The geometric locus satisfying this condition is shown to be a circle of which the center coordinates and radius are expressed as functions of the cable costs. All the foregoing principles and concepts are illustrated by numerical applications.

In Part III comparative costs of different telecommunication systems are analyzed in terms of initial, annual operating and overall total costs and

general system cost formulae are derived. Cost parameters of a number of standard systems are analyzed in detail and are supplemented by curves giving economic limits and comparative costs as functions of circuit length or number of channels.

Part IV deals with the comparative reliabilities of telecommunication systems. Survival and failure probabilities are treated as stochastic processes and formulae are derived for systems with and without automatic standby equipment. A measure of reliability is also suggested, based on a four-pole electric network theory analogy. The principle is illustrated by a numerical example giving channel and overall system failure and survival probabilities in a comparative analysis of two standard multi-channel telecommunication systems.

In Part V a particular application of Information Theory is made for a statistical analysis of fading, and the determination of the most economical and reliable fading margin of a radio link system. The treatment of this subject is supplemented by representative curves based on statistical propagation and fading data.

Part VI deals with some topographical properties of telecommunication networks. Various connectivity properties are discussed and a traffic matrix for a quantitative indication of lines or traffic is suggested. Also maximum and minimum connectivity measures are proposed, and some possible useful applications are suggested as illustrated by a number of examples in the thesis.

The conclusive remarks of Part VII explain the reasons for the choice of the analytic tools used in the analysis and development of the methods treated in the thesis.

An appended Bibliography, as Part VIII, lists potentially useful publications with annotations.

199 pages. \$2.49. MicA54-1985

ENGINEERING, METALLURGY

DISSOLUTION OF GOLD IN CYANIDE SOLUTIONS

(Publication No. 8704)

Val Kudryk, Ph. D.
Columbia University, 1954

The dissolution rate of gold in cyanide solutions was studied for various conditions of concentration, temperature and agitation. The concentration of cyanide was varied from 0.005% KCN to 0.50% KCN. Oxygen concentration was changed by varying the oxygen content of the atmosphere in contact with the solution from 11% to 99.5%. Effect of temperature was studied in the range of 80°F to 150°F. Agitation was accomplished by rotating a cylindrical specimen at different rates.

The actual amount of gold that dissolved in solution was used to determine the dissolution rate for different conditions. A method based on the assumption that the dissolution reaction is electro-chemical in nature was utilized to study the reaction. The factors that controlled the reactions at the two simpler half cells were applied to the overall reaction to obtain the rate controlling factors in the dissolution of gold.

The results of the investigation indicated that the dissolution rate is diffusion controlled. At the higher cyanide concentrations, the rate was found to be controlled by the rate of diffusion of oxygen to the surface of the dissolving specimen, whereas, with the lower cyanide concentrations, the diffusion rate of cyanide to the surface was found to be rate controlling.

83 pages. \$1.04. MicA54-1986

FOLKLORE

MOTIF-INDEX OF TALMUDIC-MIDRASHIC LITERATURE

(Publication No. 8792)

Dov Neuman (Noy), Ph. D.
Indiana University, 1954

The dissertation is an attempt to apply the idea and the classification-system of Professor Stith Thompson's Motif Index of Folk-Literature to the ancient (mostly 1st Century BC - 6th Century AD) Jewish Agada, which had been transmitted orally for generations before being recorded in the extant collections - the Talmud and the Midrashim. Its purpose: to make the Agada-motifs available to the general (non-Jewish) folklorist and the lay a foundation for future systematic folklore-study and research in Israel.

Modern Agada-scholarship, initiated by Zunz in his Gottesdienstliche Vortraege der Juden (1832), has spent most of its energy, as evident from Professor H. Albeck's Hebrew revised up-to-date edition (1947) of GV, on "Literaturgeschichte" aspects: discovering of new and critical editing of old texts, linguistic scholarship, determination of the age and geographical origin of the collections, and compilation of biographic-historical data concerning the Rabbis. Only a few among the Agada scholars have shown special interest in the narrative content, whether as a component part of traditional material circulating likewise among surrounding civilization, or as an object of folkloristic methods of research applied to orally transmitted material.

Any project of organized comparative Agada-study must be based on a motif-index which can open

the primary sources to folklorists unfamiliar with them. Light shed by the historical-comparative method on the study of ancient Jewish folk-narratives and folk-traditions may help to solve the problems of the "cultural ingathering" of the various Hebrew tribes "from the four corners of the earth" in the Israeli homeland and to create there a cultural synthesis of East and West.

The main bulk of the dissertation, 808 pp., consists of the motifs which follow the order and enumeration of the Main Index. In many cases the ms. of its forth-coming revised edition was consulted before the allotment of a new number. As the TM Index is intended primarily for English reading students of folklore who have no access to the primary sources, English translations (Soncino ed. of the Babylonian Talmud and the Midrash Rabba, etc.) have often been referred to. The source-references have been in many cases supplemented by references to modern scholarly publications, mostly in European languages, especially to Professor L. Ginzberg's stimulating notes in *The Legends of the Jews*, vols. V-VI.

Most of the new motifs are found in the two longest chs. of the thesis: V (Religion) and A (Mythological Motifs), covering respectively 18% and 16% of the motif-pages (as against 1-1/2% and 10% in the MI). The four longest chapters of MI: D (Magic), K (Deceptions), J (The Wise and the Foolish), and F (Marvels), which cover there 16%, 12%, 11-1/2% and 9-1/2% of the 2088 motif-pages, are represented in the dissertation by 9%, 3-1/2%, 5% and 8-1/2% respectively. Other chapters, where the difference exceeds 2-1/2%, are: E - The Dead (MI:5%, TM:2%) and H - Tests (MI:6 1/2%, TM:3-1/2%). The remaining 13 chapters show only minor percentage differences.

The Introduction contains definitions of terms, bibliographies on the historico-religious background of the period and on Agada-research, a Hebrew and Aramaic glossary, and data on the sources used, their historical-geographical evaluation and classification.

The life of an Agada-motif, even within the domain of ancient Jewish literature, is still incomplete, unless traced in earlier (Biblical, Apocryphal, Pseudoepigraphical) as well as in contemporary (Philo, Josephus, New Testament, Samaritan, Patristic) literature. 861 pages. \$10.77. MicA54-1987

PROVERBS IN THE WAVERLEY NOVELS OF SIR WALTER SCOTT

(Publication No. 8793)

Joseph Raben, Ph. D.
Indiana University, 1954

A brief survey of Scott's contemporary novelists reveals that few of them employed proverbs, especially in Gothic or historical novels. Writers dealing with the Irish or Scottish scene occasionally put a proverb in the mouth of a character, but there is

no consistent practice of delineating folk-types by proverbs, such as Scott was to follow. Scott may well have acquired some proverbs from his reading in Elizabethan plays, Swift's *Polite Conversations*, and works of eighteenth-century proverb collectors; it is likely, though, that he obtained the bulk of his proverbs through intimate association with the Scottish folk and retained them by means of a prodigious memory. When reproducing folk speech in his novels, Scott could draw freely on this store without recourse to printed sources.

This effortless introduction of proverbs into his writing is seen clearly in his letters and journal, where we find many of the same proverbs as function in the novels and employed in the same way: to emphasize a point, to sum up a discussion, to lend a casual and intimate tone. The occurrence of numerous proverbs in these private writings is further proof that Scott did not look up proverbs for the novels, which were written as casually as the letters.

A detailed study of the individual novels reveals a fairly consistent practice of characterizing a single personage in each novel by his idiosyncratic reliance on proverbs; one such personage may utter more proverbs than all the others in the novel together. This device was not fully developed in the first two novels, *Waverley* and *Guy Mannering*, but it appears clearly in *The Antiquary*, was used to the greatest extent in *Rob Roy* and *The Heart of Midlothian*, and appears with decelerating frequency as Scott moved away from his familiar native scene. Once more, the absence of proverbs from these later novels, which were based on reading more than observation, emphasizes Scott's primary reliance on recollected rather than sought-out materials.

An essential part of this study is an index of nearly a thousand quotations from the novels, illustrating how the proverbs were incorporated into context. These are annotated with analogues from books that Scott owned and presumably knew; there are also cross-references to the standard proverb collections. An index of words in the proverbs facilitates the location of a particular proverb.

The conclusion is that Scott was at his best when dealing with material he was intimate with, and that his great accomplishment was utilizing his knowledge of Scottish folklore - superstitions, traditions, ballads, proverbs - to create a more convincing portrayal of the simple life in Scotland than had previously appeared in art.

533 pages. \$6.67. MicA54-1988

GEOGRAPHY

THE GEOGRAPHY OF THE SUEZ CANAL

(Publication No. 8682)

Ibrahim Sakr Aly Hassan, Ph. D.
Columbia University, 1954

This geographical study of the Suez Canal should help in clarifying the problems of the Canal and its surroundings by relating them to their environment in local, regional, and global terms. Moreover, the ever-changing geographical-location concept, contributing tremendously to the Canal's importance, needs recurrent evaluation. The emergence of the Air Age makes this imperative.

The study opens with a discussion of the natural-environmental and historical-environmental backgrounds. The Near East, and Egypt in particular, with their central location and interstitial character, are most favorably endowed as the crossroads of the world. Egypt, with multiple and varied approaches radiating in all directions, is a most favorable central base for control, supply, and operation. These characteristics have been utilized since antiquity.

As a general rule, land routes were preferred to the ancient canal. The shift to the Cape route dealt a serious blow to Egypt and the Near East. But with the coming of the steamship, Egypt's route gradually came to the fore and, after the Suez Canal was constructed, became the shortest all-water route between East and West.

Because of several firm geonomic factors, the Canal enterprise has been, and promises to continue to be increasingly successful. The Canal, an important international waterway, should be kept operating efficiently when Egypt completely controls it, in 1968. The Canal is solely responsible for the existence and growth of the surrounding area, a fact reflected in several socio-geographical results.

Long before the Canal was constructed, Britain's attention was drawn to the Near East, and to Egypt in particular, as the approaches to India and the Far East. The Canal added another very important approach. Egypt's significance was also enhanced with the expansion in Africa. Britain, to safeguard her own position, attempted to control these approaches either directly, or, failing that, indirectly, and in any case, to exclude her rivals and keep the area weak. In addition to her supremacy on the seas, Britain supported this policy by playing her rivals against one another, and obtaining control of continuous land corridors from sea to sea. In that policy Egypt (and not only the Canal) had an important place. However, the Canal has never been vital to Britain nor to any other Power. In time of peace, free passage through it has never needed foreign control; in time of war the submarine and, more seriously, the airplane have made it extremely vulnerable.

The development of air transportation and air warfare, the shift in Power groupings, the increasing importance of Africa and the Near East for the expanding interests of the United States and the West have enhanced the importance of Egypt (but not that of the Canal). A policy of increasingly tightened encirclement of the rival Soviet Bloc is being effected by the West. The centrality of the Near East, its and Africa's economic and strategic importance, together with that of Egypt, and the significance of the latter as a most favorable central base in the region and as a gateway to Africa, contribute to this enhanced importance of Egypt with her Suez Canal base. But the cooperation of the peoples of the Near East is indispensable.

The policy of the West in the region has disappointed the people, and consequently cannot obtain the needed cooperation. Also, there is considerable resentment in the area against the existence of foreign bases. Moreover, an independent policy for Egypt in the "cold war" and an attempt to strengthen the conciliatory Arab-Asian Bloc in the United Nations would not only not endanger the Near East's security, but might also promote peace in a war-weary world.

470 pages. \$5.88. MicA54-1989

AN ANALYSIS OF CHINA'S EXPORT HANDICRAFT INDUSTRIES TO 1930

(Publication No. 8348)

Theodore Herman, Ph. D.
University of Washington, 1954

Handicraft production is an outstanding feature of the Chinese economy, and many centers are famous for some specialty made there for generations. Originally developed to satisfy local demands, the handicraft industries expanded under the stimulus of overseas markets. Production for export was largely localized to facilitate contact with overseas markets and hence was concentrated in the densely populated coastal area between the Canton Delta and Peking, and up the Yangtze and its southern tributaries, to Hankow.

This study analyzes the basic factors in the location and development of export handicrafts and their role in the Chinese economy. Because few products were made in centralized factories and only a few were standardized, a distinctive system of production evolved in which many hands were used from the raw material to the finished product, unfinished articles being passed from one worker to the next in an unmechanized version of the assembly line system. Such task specialization required human dexterity,

speed, and care rather than artifice ability or discriminating taste.

Beginning on a large scale in the last quarter of the nineteenth century, export handicraft production has been characterized by (1) the manufacture of Western-style articles; (2) the maintenance of a cheap labor supply, often able to compete with machine production abroad; (3) the growth of new centers along the coast to facilitate contact with Western market representatives; (4) the expansion of the merchant-employer and factory systems of organization, and the collapse of the system of relatively independent craftsmen; (5) the rapid opening of large foreign markets in the West, frequently uncertain, and their equally rapid decline; (6) the growth of a more stable market among the Overseas Chinese; and (7) the vulnerability of the workers because of their economic weakness.

By 1930 the value of handicraft exports was five times greater than in 1885, but after 1913 the relative value declined and was generally less than 10 percent of all exports.

Although commercial handicraft production was originally located inland near raw materials and/or domestic markets, expanding export trade stimulated the growth of new centers along the coast or in accessible river valleys. In the resultant location pat-

tern, almost all products for the Overseas Chinese came from south of the Yangtze River and from as far west as Szechwan Province; handicrafts for the West were made in north China, around Shanghai, and close to three ports (Ningpo, Swatow, Canton) along the south coast.

The impact of the West upon pre-industrial China is shown by an analysis of four examples selected as most typical of articles made by hand: (1) hand-made paper, (2) porcelain, pottery and earthenware, (3) rugs, and (4) lace and needlework.

If the handicraft industries are to offer a dependable form of livelihood it will be necessary to organize producers' cooperatives, mechanize where possible, expand the domestic markets, and put greater emphasis on quality products for foreign markets. Emphasis on quality handicrafts would have the effect of again raising the producer's capacity for and social esteem from creative work, as in the old handicraft tradition. Output by hand has depended to a great extent upon the low cost of labor, but it is doubtful that the several million handicraft workers in China who were undercutting the cost of machine production from 1910 to 1930 will always be available in such large numbers.

281 pages. \$3.51. MicA54-1990

GEOLOGY

ALTERATION IN THE CENTRAL URANIUM AREA, MARYSVALE, UTAH

(Publication No. 8642)

Harry Martin Dahl, Ph. D.
Columbia University, 1954

The Tertiary volcanic history of the Marysvale Area begins with the deposition of a thick series of latite and andesite tuffs, flows and agglomerates on Tertiary, Mesozoic and Paleozoic sediments. This is followed by extensive alunitization and kaolinization in the tuffs and more permeable flows. Successive emplacement of quartz monzonite porphyry, and quartz monzonite and granite followed the deposition of the Bullion Canyon Volcanic series.

The quartz monzonite magma appears to have invaded and partially assimilated the more restricted quartz monzonite porphyry magma before more than its periphery had solidified. After the quartz monzonite had solidified, but before the quartz monzonite porphyry had cooled, they were invaded by a silicic magma which forms the fine-grained granite.

A more or less orderly series of prominent fractures was produced by the tectonic forces which formed the Marysvale graben and the smaller Antelope Range horst. The tectonic stresses began in pre-Mt. Belknap time and have continued, though

probably considerably diminished in frequency and intensity, to the present. These structural features are believed to be the result of alternating east-west and north-south tensional forces. When open, as the result of tension, the prominent fractures become ideal hydrothermal conduits.

After erosion had uncovered a portion of the Central Intrusive, Mt. Belknap flows and endogenous and exogenous domes were emplaced. These were accompanied by rhyolite and glass dikes which usually followed N60°E and E-W trends.

The prominent illite-montmorillonite and related types of alteration are believed to have formed after the quartz monzonite magma had become largely solidified. They continued into post Mt. Belknap red rhyolite time.

Commercial uranium mineralization is believed to be related to the differentiation of the hydrothermal solutions. Prominent barren clay zones occur along N-S, N30°E, N60°E, E-W, N50°W and N20°W trends. This suggests a long period of changing tectonic conditions during which non-mineralizing hydrothermal solutions were altering the wall rock. Later, weak uranium-bearing solutions entered the conduits. Tectonic stresses at the time were such that the N-S and N30°E trends, followed by the N60°E and E-W trends, were most favorable to the entry of these solutions. Upon further differentiation, the

hydrothermal solutions became ore-bearing. However, structural stresses at the time had changed so that the N60°E and E-W fractures were open. These solutions formed the pitchblende, fluorite, pyrite, quartz, adularia veins. During subsequent differentiation the uranium content of the hydrothermal solutions decreased until only barren fluorite, jordanite, quartz and calcite veins were emplaced.

There is a progressive decrease in the average intensity of the slightly mineralized clay zones, the alteration adjacent to the commercial uranium-bearing veins and that adjacent to the barren fluorite, jordanite, quartz and calcite veins. This suggests that the effect of the altering solutions on the wall rock gradually diminished from the formation of the barren clay zone or the slightly mineralized argillic zones to the formation of the late barren veins.

Pitchblende and fluorite occur in fissure veins which are located within several distinct types of alteration halos. The position of the ore shoots seems to be controlled by available open space. It is thought that the emplacement of the commercial uranium veins was rapid. The origin of the pitchblende is perhaps best attributed to a decrease in the pressure of uranium tetrafluoride and the subsequent formation of pitchblende and hydrogen fluoride. The latter reacted with calcium to form fluorite.

160 pages. \$2.00. MicA54-1991

GEOLOGY OF THE HUALGAYOC MINING DISTRICT, DEPARTAMENTO DE CAJAMARCA, PERU

(Publication No. 8655)

George Edward Ericksen, Ph. D.
Columbia University, 1954

The Hualgayoc mining district in the northern part of Peru has produced ores of silver and gold since Spanish colonial times and ores of copper, lead, and zinc during the present century. In total production of silver, nearly 5,000 metric tons, it ranks as one of the great silver producing areas of the western hemisphere. From its discovery by the Spanish in 1771 until the present the district has had a sporadic production record. Most early mining was of oxidized silver and gold ores. During the latter part of the 19th and early part of the 20th centuries many mines were producing silver-bearing copper sulfide ores. At present a few are yielding small amounts of silver, copper, lead, and zinc.

Rocks exposed in the district are Cretaceous sediments intruded by stocks, sills, and dikes of Tertiary age. The sediments consist of about 300 meters of Aptian sandstones and shales overlain by some 1,700 meters of limestones and interbedded shales ranging in age from Albian to Turonian. Intrusive rocks are principally granodioritic or quartz dioritic porphyry and locally rhyolites or dacites. The major intrusives formed at about the same time, and variations in composition apparently reflect differentiation in a

common magma source. Sills and dikes, the smallest bodies range from less than a meter to about 250 meters in thickness and have strike lengths of 100 meters to 2 kilometers. The largest intrusive bodies are stocks 3 to 4 square kilometers in area. These intrusions may be protuberances on a larger intrusive mass underlying much of the mining district.

The sedimentary rocks have been folded to a slight extent and broken by high-angle faults of small displacement and many fractures and joints. The igneous rocks have been faulted, sheared, and jointed and are hydrothermally altered in vein areas. The sedimentary rocks show less hydrothermal alteration but locally have been contact-metamorphosed by the intrusives. Regional metamorphism is lacking.

Several hundred veins are exposed in the district; most are along faults, shear zones, or irregular fractures. They have lengths ranging from about 10 meters to a kilometer and are 1 centimeter to about 20 meters thick. The largest veins consist primarily of sheared wall rock with numerous quartz veinlets and only minor quantities of sulfides. The vein minerals were largely deposited in fissures and cavities, with only minor wall-rock replacement. The most productive veins are generally less than 2 meters wide and consist principally of pyrite and quartz with lesser amounts of sphalerite, galena, tetrahedrite, and chalcopyrite. Both tetrahedrite and galena are silver-bearing, and some veins contain minor quantities of enargite, stibnite, jamesonite, bournonite, and bournonite. Crystalline barite makes up the major portion of the gangue in many veins, and marcasite, pyrrhotite, rhodochrosite, dolomite, and calcite are found in a few. Native silver and silver sulfides accounted for most of the production of silver in colonial times, but during the present century almost all of this metal has come from silver-bearing tetrahedrite and galena.

The district probably will maintain its present rate of production for many years, and the stimulus of high prices may even result in a moderate increase. It is doubtful that reserves are large enough to sustain a production of more than a few hundred tons per day over a long period of time. Considerable amounts of ore remain in the known veins, and careful exploration should reveal new ore bodies.

246 pages. \$3.08. MicA54-1992

THE MARYSVALE CANYON AREA, MARYSVALE, UTAH

(Publication No. 8669)

Jack Green, Ph. D.
Columbia University, 1954

The Marysville Canyon area is located about 200 miles south of Salt Lake City, Utah. The area is underlain by Tertiary volcanics which have been intruded by quartz monzonite. The volcanics present a most unusual display of the effects of hydrothermal alteration, although the quartz monzonite is the chief uranium-bearing rock.

Inspection of the rock analyses of the Marysvale area indicates that differentiation followed the normal calc-alkalic trend. Deuteric action preferentially altered hornblende in the flow rocks with respect to augite.

Hydrothermal alteration is governed largely by the rock chemistry of the Marysvale Canyon area with the extensive formation of potash rich clays in the latites and monzonites and alunite in the tuffs. With increasing intensity of alteration in the latites, the mixed lattice clay types (montmorillonite-illite) tend toward sericite as observed at Big Rock Candy Mountain. Increasing intensity of alteration in the tuffs possibly produces silicification at the expense of kaolinization in alunitized areas.

The preference for secondary uranium mineralization in the pyroxene andesite (1) of the Bullion Canyon volcanics is shown at East Slope and Copper Butte where geologic relationships are similar.

The inherent nature of the host rocks for primary uranium mineralization supports the hypothesis that uranium was introduced early in a cobalt, nickel, molybdenum - copper - silver sequence after the formation of alunite. The relatively higher calcium content of the quartz monzonite host, as well as its greater susceptibility to alteration, facilitated the precipitation of uraninite and hydrofluoric acid upon the reaction of uranium tetrafluoride with steam. The hydrofluoric acid reacted with the available calcium to form the associated fluorite. The accompanying hydrogen sulphide fluids, because of lesser reactivity, travelled farther than the hydrofluoric fluids to form the pyritic blanket at Big Rock Candy Mountain.

231 pages. \$2.89. MicA54-1993

GEOLOGY AND MINERAL DEPOSITS OF THE LAKE VALLEY QUADRANGLE, SIERRA, GRANT, AND LUNA COUNTIES, NEW MEXICO

(Publication No. 8692)

Henry Louis Jicha, Jr., Ph. D.
Columbia University, 1952

The Lake Valley quadrangle is about 15 miles north of Deming in southwestern New Mexico. The area is nearly flat in the southeast but becomes increasingly rugged in the northwest and southwest, where local differences in elevation may exceed 1000 feet.

One of the main structural features of the area is the north-south trending Mimbres Mountains, a faulted anticlinal "high" which extends down the west side of the quadrangle as a apophysis from the Black Range anticline to the north. These mountains terminate at a large regional fault which separates them from the Cooks Range, a large faulted mass of pre-Cambrian, Paleozoic, and Mesozoic rocks, cut by intrusions, in the southwestern corner of the area. A third large structural feature is in the northeast; it is the Lake Valley fault block, in which early and middle Paleozoic limestones and shales have been

raised up to the level of the surrounding Tertiary volcanics. Lesser faults of general north-south and east-west trend are found in many areas but are difficult to trace for any distance in the volcanic rocks.

Almost every geologic period, with the exception of Triassic and Jurassic, is represented by at least one formation. Above the granitic pre-Cambrian basement lies a series of Paleozoic and Mesozoic limestones, sandstones, and shales, represented completely only in the Cooks Range. The granodiorite intrusion in this area and the main faulting are apparently Laromian in age. The Tertiary system is represented by a series of volcanics, which covers about two-thirds of the area. The earliest series is made up of calcic latites; it is followed by a latitic series which has been intruded by a series of north-east-trending porphyry dikes. Later quartz latite tuffs and rhyolite flows were deposited on an erosion surface on the latites. The rhyolites were succeeded by olivine andesites. Then a general period of erosion produced a thick series of fanglomerates, the Santa Fe formation, which covers a large part of the southern and western area of the quadrangle. Subsequent uplift and rejuvenation have yielded the present topography. Late gravels and alluvium were formed during the last erosion cycle. There were several periods of erosion and at least one period of faulting during Tertiary time.

There are four main mineral districts in the Lake Valley quadrangle: the Lake Valley mining district, characterized by oxidized silver-manganese limestone replacement deposits in the Lake Valley limestone; the Macho mining district, which contains lead-silver vein deposits in calcic latites; the Old Hadley-Graphic district, characterized by copper-lead-zinc-silver vein mineralization in calcic latites; and the Cooks Peak district, where there are lead-zinc-silver replacement deposits in the Silurian Fuselman limestone. Only deposits in the Cooks Peak district were being mined in 1951. Massive sulfides containing up to 45 percent combined lead and zinc were recovered. Several other smaller prospects are also known. The mineralization is believed to be of Tertiary age as it occurs both in calcic latite and in Paleozoic rocks.

Masses of perlite have been found in the rhyolite flows.

143 pages. \$1.79. MicA54-1994

CONGLOMERATES ASSOCIATED WITH THE CUBITAS PLATEAU, CUBA

(Publication No. 8702)

Myron Theodore Kozary, Ph. D.
Columbia University, 1954

Two penecontemporaneous conglomerates associated with the Cubitas Plateau; previously interpreted as reworked breccias along the sole of a southward moving erosion thrust; were derived from two different terranes and deposited under different conditions but in response to the same sequence of tectonic

events: compression, imbrication and northward high-angle overthrusting of the southern margin of the Upper Cretaceous-Paleocene Cubitas basin.

One of the conglomerates, stratigraphically and structurally conformable with the basin structures, started as an influx of stratigraphically upward coarsening serpentine detrital during the deposition of the youngest member of the Cubitas limestones. It grades through sands, gravels, and cobble-sized angular conglomerates of serpentine and Paleocene to Middle Eocene limestones. Formed along submarine faultscarps and deposited at the edge of the Cubitas basin, the conglomerates were reworked with a northward shift of the fault zone and subsequently infaulted with the older basin deposits during thrusting.

The other conglomerate, with only pre-Danian constituents, none from the Cubitas basin, lies as a veneer in the Senado Plain between the Camajan Hills and the Cubitas Plateau. It consists of locally derived angular limestones - "Aptychus" and "Camajan" - and a wide assortment of igneous, metamorphic and sedimentary roundstones derived from further south, embedded in an unfossiliferous marly matrix, unconsolidated, but sorted and bedded with a steep southern dip. Vertical diapirs of remobilized serpentines crosscut and disturb the deposits. During the deformation of the Cubitas basin, sharpstones derived from terrestrial faultscarps along the reverse slopes of the imbricate fault blocks were deposited together with roundstones from previous erosion cycles, brought into the area prior to the deformation.

The deposits of the Cubitas basin were raised from the late Tertiary on along normal faults to form the present plateau, tilting also the conglomerates in the Senado Plain, mobilizing the shallow serpentines beneath and squeezing them into the conglomerates. 197 pages. \$2.46. MicA54-1995

ALUNITIC ALTERATION AT MARYSVALE, UTAH

(Publication No. 8750)

Raymond Laurence Parker, Ph. D.
Columbia University, 1954

The alunite deposits in the Marysville region, Utah are of two types, vein and replacement bodies. The wall rock alteration that borders the alunite veins has been divided into the feeble, moderate, and intense phases respectively in order of their zonal distribution toward the veins. Feeble phase alteration is characterized by the formation of illite-montmorillonite mixed lattice clay, kaolinite and minor quartz. The moderate phase is represented by the assemblage, alunite, kaolinite and quartz. Strongly alunitized and silicified rock adjacent to the vein represents the intense phase of alteration.

Alteration in the replacement deposits consists of the feeble and moderate phases. The alunite bodies represent the moderate phase and those bodies that

are sharply defined, are surrounded by an envelope of feeble phase alteration.

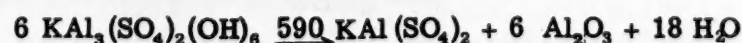
Results from the study of the alunite deposits suggest the following conclusions:

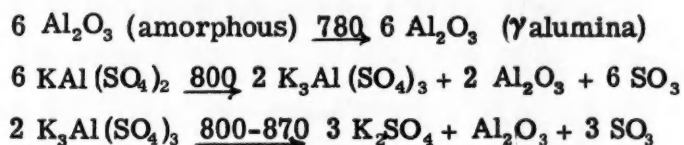
1. Alteration and alunite deposition resulted from the same solutions and were contemporaneous processes.
2. Solutions transported K_2O , Al_2O_3 , SO_3 , H_2S and probably SiO_2 to the site of the vein deposits.
3. Solutions transported at least SO_3 to the site of the replacement deposits.
4. The alunite depositing solutions were acid at the level of deposition.
5. The solutions became progressively less acid with increasing distance from the channelway, a fact which largely accounts for the zonal distribution of wall rock alteration.
6. The temperature of the solution at the time and level of alunite deposition was probably below $350^\circ C$.
7. The alunite veins are largely fillings of solution channelways and the associated wall rock alteration is due to lateral solution migration from the channelway.
8. The replacement bodies are the result of alunite replacement of originally porous horizons in the volcanics which became permeated by sulfate-bearing solutions.

Isomorphous substitution of sodium for potassium has been studied in both natural and synthetic alunite samples. The c lattice constant for alunite ranges from 17.28 to 17.31 Å; whereas the constant for natroalunite is 16.71-16.72 Å. The relation between the c lattice constant and the sodium-potassium composition suggests that isomorphism exists over a restricted range for alunite, though insufficient samples were obtainable to determine the nature of isomorphism for natroalunite. In the range of composition between alunite and natroalunite only samples which are mixtures of alunite and natroalunite have been found, and the possibility is suggested that natural homogeneous alunite does not occur in this range of composition.

Synthetic alunite samples with a range of sodium-potassium contents have been synthesized. Most synthetic alunite samples have a higher K:Na ratio than the solutions from which they were produced. Although the synthetic alunites crystallize with the alunite structure, their lattice constants and chemical compositions differ slightly from natural alunites. The partial substitution of oxonium ions (H_3O^+) for sodium and potassium ions is proposed as the explanation for these anomalies. Complete isomorphism from the potassium end to the sodium end of the synthetic alunite series is evidenced by the linear shrinkage relations of the unit cell dimensions.

The thermal behavior of alunite and the practicability of semi-quantitative differential thermal analysis of alunite ores has been studied from artificial mixtures of alunite, quartz and kaolinite and from chemically analyzed alunite ores. The chemistry of thermal reactions of alunite are:





Differential thermal curves of alunite samples of coarse grain size are characterized by a double endothermic peak in the temperature range 570°-640° C. The doublet condition of this thermal peak is due to two stages of alunite decomposition.

Careful control and standardization of variable procedures and factors inherent in differential thermal analysis has permitted accurate semi-quantitative analysis of alunite mixtures. Graphs which relate the alunite percentage in mineral aggregates to the area and amplitude of the 590° C. endothermic peak have been established for both artificial and natural alunite. The area enclosed by the thermal peaks is the most reliable measure of the composition of samples in which the grain size is variable. If the grain size is consistent among the samples the peak amplitude can also be used.

139 pages. \$1.74. MicA54-1996

HYDROLOGIC STUDIES AT SEABROOK, NEW JERSEY

(Publication No. 8766)

Irwin Remson, Ph. D.
Columbia University, 1954

A method has been developed at Seabrook Farms, N. J., for annually disposing of approximately one billion gallons of waste water derived from food processing operations, by means of "woods irrigation." The successful functioning of the system depends upon the local topography, geology, hydrology, soils, climatic balance, and flora. The geologic and hydrologic phases of this unusual operation are being investigated by the U. S. Geological Survey in the belief that it provides exceptionally favorable opportunities for evaluating some poorly understood parts of the hydrologic cycle.

A water-budget study was made of the irrigated woods taking into account precipitation, water spreading, surface-water runoff, ground-water discharge, evapotranspiration, and changes in ground-water, surface-water, and soil-moisture storage. It was possible to make sound estimates of all of these factors by applying the techniques of geology, hydrology, and climatology. A weekly water-budget equation was formulated with the coefficient of transmissibility, the specific yield, and the permeability of the uppermost layer of the saturated zone appearing as unknown terms. Statistical analysis of the weekly equations for approximately one year gave values for the three unknown hydrologic parameters.

The bookkeeping system devised by C. W. Thornthwaite for estimating evapotranspiration and soil moisture was adapted to the water-budget analysis. It is shown how the use of this climatological tool can reduce water-budget errors due to improper measurement of evapotranspiration, soil moisture, and precipitation detention.

Various methods including infiltrometer, mound decay, basin-drain, drain function, and pumping tests were employed to study the transmissibility, permeability, specific yield, and infiltration capacity of the spreading area. The substantial specific yield and coefficient of transmissibility and the very large infiltration capacity indicated by these studies, permitted an appraisal of the irrigated woods as an effluent disposal area. Precluding significant changes in vegetation, soil conditions, or in the present schedule, which permits a "resting" or recovery period during the winter, it seems probable that the area can continue to be used indefinitely for the disposal of approximately one billion gallons of waste water annually.

A cumulative hydrograph of 29 wells in the spreading area also demonstrates the success of "woods irrigation" as a waste-water disposal technique. It appears to be a promising method for recharging ground-water aquifers in some areas of critical water supply.

Several observation wells were found to be unreliable in the course of the studies at Seabrook Farms. Some of the causes for their shortcomings are discussed.

A tentative method was developed to estimate water losses resulting from capillary rise from the water-table aquifers in the spreading area. "Potential capillary water loss" is defined as a measure of the ability of the capillary interstices of a soil to lift water from the water-table to the ground surface. By applying equations describing soil-moisture movement, graphs were drawn that illustrate how the "potential capillary water loss" varies with the depth to the water table for two soils. Illustrations are provided to show how these methods can be applied to ground water, to climatology, and to soil-tank data.

A tentative equilibrium pumping-test method was devised to determine the specific yield of some of the shallow water-table aquifers in the spreading area. As an important corollary, this method may be used for the determination of entrance losses in a pumping well. Its usefulness was given a preliminary check by applying it to a well-known pumping test described in the ground-water literature.

It is believed that many of the techniques and relationships arrived at in the course of the U. S. Geological Survey's investigations at Seabrook Farms are applicable to routine ground-water studies.

Appendix I consists of the definitions of some of the hydrologic terms used in this paper.

171 pages. \$2.14. MicA54-1997

HEALTH SCIENCES

HEALTH SCIENCES, PUBLIC HEALTH

THE TRANSMISSION OF WESTERN EQUINE ENCEPHALITIS VIRUS BY THE MOSQUITO CULEX TARSALIS COQUILLET AND THE INTERRELATIONS OF THIS VIRUS AND THE AVIAN MALARIA PARASITE PLASMODIUM RELICTUM

(Publication No. 8876)

Herbert C. Barnett, Ph. D.
University of Pittsburgh, 1954

This investigation was undertaken to obtain detailed information on the laboratory transmission of western equine encephalitis virus by the mosquito Culex tarsalis Coq. The possible interrelations of this virus and the avian malaria parasite Plasmodium relictum were also investigated, both in Culex tarsalis and in canaries, to determine whether or not this parasite plays a role in the epidemiology of western equine encephalitis.

Mosquitoes were permitted to feed on chicks or canaries infected with the virus and, after varying intervals, were then permitted to refeed on normal chicks or canaries. Suckling white mice were used as indicators of viremia in birds. In this manner, 131 virus transmissions were obtained. The minimal extrinsic incubation period was found to be four days, and it was further demonstrated that the rate of transmission steadily increased during the ensuing eight or nine days, until it finally stabilized on or about the thirteenth day following the infective blood meal. Transmission was readily accomplished by the bite of a single infective mosquito and virus was transmitted by such a mosquito as often as four times in 11 days. Virus transmission was obtained from mosquitoes as late as 60 days after they had had an infective blood meal and from these results it is presumed that mosquitoes can remain infective for life.

Virus transmission data obtained in this study were compared with unpublished data on virus titrations of whole mosquitoes obtained by L. A. Thomas. The same virus and mosquito strains were used in

both studies. Little correlation was found between the rate of transmission by Culex tarsalis and virus titers in whole infected mosquitoes, when the two were compared over a period of two weeks following infective blood meals.

Attempts to obtain virus transmission by permitting the progeny of infective female mosquitoes to feed on normal birds produced negative results, indicating that transovarian passage of virus is unlikely. One virus transmission was obtained in 24 attempts, when mosquitoes were interrupted while feeding on a virus infected bird and immediately thereafter placed with a normal bird to resume feeding, thus indicating that mechanical transmission can occur.

By permitting some lots of Culex tarsalis to feed on canaries infected with virus during the course of patent Plasmodium relictum infections, and other lots on canaries infected with the virus only, it was possible to compare their abilities to transmit virus when these mosquito lots were subsequently offered normal birds upon which to feed. The results indicated that the presence or absence of avian malaria infection in mosquitoes had little or no effect on the ability of mosquitoes to transmit virus.

Virus titrations of red blood cells from canaries concurrently infected with virus and Plasmodium relictum and virus titrations of red blood cells from canaries infected only with virus produced erratic results. In tracing the course of viremia in canaries with concurrent infections by virus isolation in white mice, it was found that viremia lasted only five days, despite the persistence of parasitemia. Similarly, virus isolation attempts from the spleens of canaries, which had recovered from concurrent viremia and patent malaria, were negative. These results indicate that the avian malaria parasite, Plasmodium relictum, is unlikely to serve as a reservoir of the virus in nature. On the contrary, evidence based on virus titrations indicates that the level of viremia is suppressed when canaries are infected with virus during the course of patent Plasmodium relictum infections. This reduced titer of virus is sometimes below the minimal level necessary to render mosquitoes infective. 99 pages. \$1.24. MicA54-1998

HISTORY

HISTORY, GENERAL

FRANCIS FAUQUIER, LIEUTENANT-GOVERNOR OF VIRGINIA, 1758-1768: A STUDY IN COLONIAL PROBLEMS

(Publication No. 7994)

Nellie Norkus, Ph. D.
University of Pittsburgh, 1954

Francis Fauquier (1703-1768), the son of a Huguenot immigrant to England who readily attained success, was appointed lieutenant-governor of Virginia in 1758, apparently through the influence of Lord Halifax. It was a critical time. William Pitt, determined to win the Seven Years' War at any cost, had recently assumed the helm of government. Fauquier, therefore, made frequent appeals to the burgesses for financial aid. In order to establish harmonious relations with council and burgesses, the governor found it necessary at times to violate his instructions. Though directed by the Board of Trade to separate the two offices of speaker and treasurer, held by the same individual, Fauquier, as a practical man, found it advisable to work with rather than against Speaker John Robinson, the most influential man in the colony. Fauquier also aligned himself with the burgesses against the clergy in support of the two-penny act, which led to the "parson's cause," made famous by Patrick Henry's attack on clergy and king. The resultant friction between the governor and the leaders of the clergy was to continue throughout Fauquier's administration. In spite of occasional violations of his instructions, Fauquier managed to maintain the delicate balance between royal prerogative and the welfare of the colony.

His administration was primarily concerned with conducting to a successful conclusion the French and Indian War, assisting South Carolina in the Cherokee War, protecting the colony during the holocaust that attended Pontiac's uprising, maintaining friendly relations with the Indians to the south and to the north at a time when Virginians were clamoring for land, resisting the pressure from land companies for large grants of territory, suppressing illicit trade, attempting to adjust the financial policy of the colony to the demands of the British merchants, and blanketing, to the extent possible, the flames kindled by the Patrick Henry Stamp Act resolutions, the arrival of George Mercer as stamp distributor, and the growing struggle between tidewater aristocracy and frontier yeomanry.

The thesis reveals that Fauquier's task was rendered more difficult by the economic distress during the period as a result of poor tobacco crops or low tobacco prices, the increasing dominance of burgesses over council and governor, the challenge from

the western part of the country of tidewater supremacy, and the rising resentment of the colony at the chains riveted upon them by a Parliament dominated by the interests of the British merchant.

That Fauquier was not carried to disaster by this whirlpool of difficulties may be attributed to his integrity of character, earnest desire to conduct the government for the benefit of the colony, and finesse in handling council and burgesses. That he managed, after violations of instructions, to appease the Board of Trade was likely owing to Lord Halifax's influence and to his own adroit explanations and promises of future compliance.

Throughout most of his administration, Fauquier was a sick man; but only towards the end of his life did he neglect any duties. His interests were varied. He wrote a pamphlet on taxation which led to his appointment. A Fellow of the Royal Society, shortly after his arrival in Virginia, he contributed an account of a hailstorm. He was a musician and included in his musical group the youthful Jefferson. And it may be that he was a gambler. Early historians make the accusation; the proof is missing. His views on government, taxation, science, slavery, and religion were far in advance of his day and age. Jefferson, writing in 1815, characterized Fauquier as "the ablest man who ever filled the chair of government" in Virginia.

664 pages. \$8.30. MicA54-1999

THE SOCIAL PHILOSOPHIES OF EARLY AMERICAN LEADERS OF LABOR

(Publication No. 8752)

Edward Pessen, Ph. D.
Columbia University, 1954

The men who led the first American labor movement, from 1827 to 1837, were unlike American labor leaders of today in a number of important respects. Such representative early leaders as Thomas Skidmore, Robert Dale Owen, George Henry Evans, Stephen Simpson, Seth Luther, Charles Douglas, Thomas Brothers, Theophilus Fisk, Levi Slamm, Ely Moore, John Commerford, William English, and John Ferral were active in trades' unions of skilled craftsmen, "workingmen's parties," associations consisting of farmers, factory operatives, and skilled workers, and the broad general reform movement of their time. That a number of these men had never been working men themselves did not prevent them from playing leading parts in the broad labor movement of that day. Working men who hoped to escape from the evils of a factory system and rise to higher social status had no difficulty in accepting middle-class reformers as their leaders.

According to the early labor leaders, not only was American society marred by inequality and the misery of the laboring poor, but social conditions were worsening with each passing day. They professed to see sharp class cleavage. On one side were the powerful few, the selfish class of rich capitalists, in control of most of the nation's wealth, the government and the major parties, and using their power to perpetuate their dominance. On the other side was the depressed majority, the working men whose labor created all of the nation's wealth but who were nevertheless degraded and exploited.

The spokesmen of labor attributed this alleged social injustice to the organization and the institutions of society. Rejecting Malthusianism and other theories which held the poor responsible for their own misery or attributed social distress to man's innate traits, they charged that such social phenomena as monopolies, banks, private property, machines and factories owned by profit-hungry entrepreneurs, caused society's woes.

They were optimistic about the future, however. Believing for the most part that human nature was the product of its social environment, they looked forward to a transformation in society which would simultaneously remove the flaws which his unhappy social state had grafted on to the character of man. They wanted a society in which working men were highly respected and men were rewarded economically in accordance with how much and how well they produced. Not doctrinaires, the early labor leaders did not call themselves socialists, though a number of them favored a system of "cooperative industry."

They hoped that the necessary changes in society would be brought about largely through the education of the working class. The labor leaders were ardent advocates of public education for a number of reasons. They believed education improved man's character, erased social snobbishness, and prepared labor to play a more forceful part in politics. Most of the labor leaders were not wedded to any one approach to reform. They favored labor's independent political action, strong unions, strikes, and labor newspapers as means by which labor could achieve its aims. One of them even favored a peaceful revolution (to be brought about by the vote of the majority). But they all believed that to improve its conditions and change society, labor must depend primarily on its own independent activity.

Though their social philosophies were more radical than those of American reformers outside of the labor movement, the early American labor leaders did not go so far as did English labor leaders in their plans for the reorganization of society. Such English socialists as Robert Owen and William Thompson influenced their thought, but in the last analysis their social philosophies were the product of their indigenous experiences.

380 pages. \$4.75. MicA54-2000

THE BROTHERHOOD OF LOCOMOTIVE ENGINEERS AND ITS LEADERS, 1863-1920

(Publication No. 9218)

George James Stevenson, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Henry L. Swint

The Brotherhood of Locomotive Engineers, founded in 1863, stood apart from the contemporary labor movement. In the period 1860-1880 organized labor was characterized by demands for social reform rather than improvement of the workers' immediate status and labor leaders favored establishing producer's co-operatives as an immediate palliative for the industrial system. The Brotherhood, however, emphasized craft unionism and collective bargaining with its employers as the means of bettering the conditions of labor of its members.

The history of the engineers' union to 1920 may be divided into four periods. These periods correspond to the terms of office of the four chief executives who directed the union during the period covered in this work: William D. Robinson (1863-1864), Charles Wilson (1864-1874), Peter M. Arthur (1874-1903), and Warren S. Stone (1903-1920).

Robinson initiated the union into a vigorous trade union program. The union had been organized in part to resist attempts by the carriers to reduce wages, but Robinson was not content with a purely negative role. He proposed that the union should actively participate in the process of making wage decisions, not limiting itself to protest against the unilateral decisions of the carriers. His insistence upon an aggressive policy led to his defeat at the union's first convention. The majority of members would not sanction an immediate frontal attack upon the railroads. An extended fight with the railroads undoubtedly would have destroyed the union.

The second period was characterized by caution in organization and almost complete subservience to the requirements of the employers. Charles Wilson did his utmost to persuade management that his organization was not inimical to the interests of the railroads. He believed that if the union could establish the fitness and reliability of its members management would reward those members with higher wages. During this period the union embarked upon an insurance program, partly to protect the worker, but in part to give the engineers a vested interest in the union. The insurance program and Wilson's policy of caution contributed to characterize the union as solely a fraternal insurance association.

Events rather than a deliberate change in policy provoked the organization into actively protecting its economic interests. The successive waves of wage reductions following the panic of 1873 forced the union from co-operation with management to opposition to management. Furthermore, it should be recognized that Wilson's policy was not always accepted by his members. Throughout his administration continual attempts were made to carry on the policy set by Robinson. When their leader appeared unwilling

to adopt a firm stand against the railroads, the union turned to new leaders. By 1873 the union had grown in numbers and its members had achieved a degree of loyalty to the union and pride in their craft that made them unwilling to accept the humble role which Wilson prescribed.

The third period, from 1874 to 1903, was one of strong, steady growth and a firm, although conciliatory, labor policy. The new chief officer, Peter M. Arthur, after steering the union through the troublesome years from 1874 to 1877, worked to make the union a factor to be considered in the railroad industry. Under his guidance the union moved forward, temporizing when it must and when such action appeared expedient, but constantly and cautiously seeking to better its bargaining position. The establishment of written contracts with the carriers must be counted the most significant achievement of that era. Collective bargaining in matters of hours, wages, and working conditions was established as a common procedure, and the union successfully met the challenge of industrial unionism.

In the final period covered by this work there appeared not so much a change in policy as a more vigorous prosecution of the policy already established. Arthur's successor, Warren S. Stone, must be credited with having improved greatly the terms of employment of his members. Wages were substantially increased and the working day shortened. Stone turned to industry-wide bargaining as a more efficient method of standardizing and raising wage rates than dealing with separate systems of carriers. The insurance program was broadened to protect the engineer and his family in almost every contingency. In those years the engineers achieved a degree of success which gave the appellation "aristocracy of labor" real meaning.

This dissertation concludes with an account of the events which led the union into the realm of social and economic reform. After 1920 the union embarked upon a program of labor banking, consumer co-operatives, and political action that appeared to obscure the fundamental economic basis of action outlined by the founders of the Brotherhood.

519 pages. \$6.49. MicA54-2001

HISTORY, ANCIENT

THE HĀB/PIRU

(Publication No. 8549)

Moshe Greenberg, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. E. A. Speiser

The body of the dissertation (a) assembles all the available material on the SA.GAZ/HĀB/piru, and (b) analyzes it for information regarding the social status, composition, and origins of the group. A sketch of the history of the problem precedes, and conclusions follow, the main body. The highlights of the conclusions are here set forth.

sions follow, the main body. The highlights of the conclusions are here set forth.

1. The terms SA.GAZ and HĀB/piru are co-extensive and interchangeable. This is inferable from the Hittite alternation of the two in god lists, and from the Ugaritic parallelism of SAG.GAZ and 'pru. It is as clearly indicated by the overall congruity of the two groups, going back to earliest times.

2. The SA.GAZ/H. are normally a recognized and legitimate element of society throughout the Near East of the 2nd millennium B.C. Thus we find them as dependents, either of individuals or of the state. While they are mostly organized into military units, there is also evidence pointing to their employ as agricultural laborers or shepherds. Their "outlawry" appears, upon examination, to have been a concomitant of local instability rather than an essential attribute of their own group.

3. Present evidence attests exclusively to cities and countries as places of origin of the SA.GAZ/H. Little can be said in favor of their desert or beduin origin.

4. Names of SA.GAZ/H. display a wide variety of linguistic backgrounds, often conforming to those of the local population. This bespeaks the ethnic heterogeneity of the group.

5. The SA.GAZ/H., then, were a motley of persons raked together from various localities, having in common only a particular social status. What moved individuals to "become HĀB/piru" appears to have been misfortune or misdeed: mutinous underlings, fugitives from law or disturbances at home found ready reception among the SA.GAZ/H. These uprooted, propertyless people, usually foreigners wherever they are found, could subsist in ordered society only in a state of dependence.

6. The ultimate origin of the group is obscure. Perhaps it is significant that the material on the SA.GAZ/H. sets in coincident with the Amorite infiltration into Mesopotamia at the beginning of the 2nd millennium. Could the original core of the SA.GAZ/H. have consisted of the economically destitute of the West Semitic population, to which similar vagrants were later attracted regardless of origin?

7. Philological considerations also point to the West. The phonetically consistent writings SA.GAZ, SAG.GAZ, SA.GA.AZ suggest that we have here a pseudo-ideogram for šaggāšu. But since the Akkadian value 'murderer' is too severe for the normal nature of the group, and since the necessity for glossing SA.GAZ (with habbātu) would be strange if it were an Akkadian word, it is suggested that šaggāšu derives from West Semitic *šgš 'be restive,' 'be disturbed' - meaning 'one who is restive' or the like, an apt epithet for this foot-loose group. Its gloss habbātu must likewise be derived from one of the homonyms of habātu 'plunder' which have a milder meaning; either 'be in motion' or 'receive' may yield possible forms. In view of the susceptibility of the group to outbreaks of violence, the possibility of an intentional pun in this choice of a gloss must be considered.

HĀB/piru, on the best present evidence, goes back to 'apiru - probably a West Semitic form; no satisfactory etymon has yet been suggested.

8. Combination with Biblical "Hebrew" ('ibrī) is problematic. Philologically the two forms differ, though the difference is not impossible to compose. Substantively, 'Apiru is a social classification with no ethnic implications; Hebrew is a gentilic used solely to denote the ethnic relationship of the Israelites. These two spheres may have met in Abraham the Hebrew, who may at once have been an 'Apiru as well as the ancestor of the Israelites. 'ibrī will then be a peculiarly Biblical adaptation of the social term. Further historical combinations appear unfounded, specifically the identification of the El-Amarna SA.-GAZ/H. auxiliaries and raiders with any part of the invading Israelites.

262 pages. \$3.28. MicA54-2002

POLITICAL INFLUENCE IN ROMAN
PROSECUTIONS: 78 B.C. TO 60 B.C.
WITH A LISTING OF THE TRIALS

(Publication No. 8943)

Louise Price Hoy, Ph. D.
Bryn Mawr College, 1952

In this dissertation there are discussed eighty-one prosecutions in Rome from 78 B.C. to 60 B.C. Five of these prosecutions were civil, the remainder criminal cases. The political factors in each case are analyzed as they relate to individuals or to party groupings. The appendix contains a list of the cases discussed, giving the prosecutor, the defendant, the charge, the court, the year, the counsel for the defense, and the verdict, so far as they are known. A bibliography is also included.

The Introduction to the dissertation contains a brief summary, describing the criminal courts, the nature of political groupings in Rome, and the ways in which political factors could affect criminal prosecutions.

The first chapter, which deals with prosecutions from 78 B.C. to 70 B.C., emphasizes those that relate chiefly to the breakdown of the Sullan constitution. In this chapter evidence is presented to show that the extent of corruption of the senatorial jurors in this period, and especially the notorious corruption connected with the Iudicium Iunianum, has been exaggerated.

The second chapter considers the trial of Verres in 70. Special attention is given to the various political factors that could influence the individuals involved in prosecutions, and to the way in which current political issues could be used in appeals to the jurors.

Chapter three, taking up the prosecutions from 70 to 60 B.C., is divided into four parts: the first, the trials from 70 to 67 B.C., from the end of Pompey's first consulship to the passage of the Gabinian law; the second, the trials from 67 to 63 B.C., from the passage of the Gabinian law to the beginning of Cicero's consulship; the third, the trials in 63 B.C. and after the Catilinarian Conspiracy; and the fourth, the trials from 62 to 60 B.C.

Three trials are discussed in section one of the third chapter but these admit no satisfactory analysis of the political factors affecting them. The second section of chapter three deals with twenty-one completed, and five incomplete, trials. The majority of these cases reflect the political strife in Rome after Pompey's departure for the East under the terms of the Gabinian law. The optimates appear openly in the trial of C. Cornelius, and their influence can be traced in other trials. Pompey can be connected with several prosecutions, the most important of which secured the condemnation of Autronius and Sulla, the consuls designate for 65. The influence of Crassus and Caesar can also be traced in several trials but at this period it was less than that of Pompey. The third section of chapter three discusses seventeen trials, most of which were the result of the Catilinarian Conspiracy, and therefore without further political interest. Only two of the seventeen possess political significance. In these two Caesar took the initiative in court proceedings against the optimates. The final section of chapter three deals with four prosecutions, the most important of which is the trial of Clodius, whom Pompey, Caesar, and Crassus, each independently, exerted themselves to save.

The conclusion of the dissertation lists the incidence of charges in the prosecutions discussed and illustrates with examples drawn from chapters one, two, and three the personal character of Roman prosecutions. 155 pages. \$1.94. MicA54-2003

HISTORY, MEDIEVAL

SUCCESSION TO THE RULE IN ISLAM:
WITH SPECIAL REFERENCE TO
THE EARLY 'ABBĀSID PERIOD

(Publication No. 8540)

Anuar Georges Chejne, Ph. D.
University of Pennsylvania, 1954

Supervisor: F. Rosenthal

This investigation is concerned with the manner in which the succession to the Caliphate was handled during the first three centuries of Islam with particular reference to the early 'Abbāsid period from the accession of as-Saffāh (750-4) to that of al-Mu 'taḍid (892-902). It consists of two main parts: I. a discussion of the pre-Islamic background of succession and of Muslim political theory, and II. a historical survey of actual cases of nomination as they have been reported by early Muslim historians, including translations of the actual documents of nomination.

The Muslims, like the ancient and medieval peoples, did not escape the unhappy consequences resulting from the unsettled state of affairs as regards the transmission of power. The lack of a concrete formula of succession contributed to recurring crises and internal revolutions and was, perhaps, one of the most important causes of the decline of the Islamic State. Theologians, jurists and political

thinkers were not unaware of the unsettled state of affairs in this respect. Their views were inspired by a variety of actual and alleged historical precedents and appear to have been formulated concurrently with the attempts of the 'Abbāsids to find a viable formula of succession.

During the first years after Muḥammad's death, the selection of the new head of the Muslim community followed the pre-Islamic pattern of acclamation by a group of tribal leaders whose choice was then confirmed by the whole community. The selection was determined by the belief that the ruler ought to be the best man available. However, with the expansion of Islam it was no longer feasible to retain the criteria of rulership which were suited to the old patriarchal environment. Therefore, the procedure of election soon changed. Under the influence of legitimist claims to the Caliphate, that change took the form of nomination by the incumbent.

The procedure of nomination, which remained subject to endorsement by the notables and, in theory, the whole Muslim community, continued to be the general rule among the Umayyads and the early 'Abbāsids. In order to insure the success of his nomination, the ruling caliph drew up a legal document which was sworn to by all believers and took on an irrevocable character. Later jurists and theologians then sanctioned the procedure of nomination as the best means for insuring the continuity and smooth transmission of power. However, they also held on to the concept of election which conformed with the lofty ideals of Islam and Muslim tradition.

The Umayyads always nominated members of their family as successors. Since their *esprit de corps* was strong and their choice of successors was still determined by the desire to find the best available candidate, their arrangements proved largely successful. As a rule, they made provisions for more than one successor to succeed them and their wishes were respected even to this extent.

The 'Abbāsids, who claimed the Caliphate as relatives of the Prophet, continued the Umayyad practices of nomination. But unlike the Umayyads, they always faced a good deal of unrest and political tension with the plans they made for succession. The caliphs of the eighth century were prone to change their minds and disregard earlier arrangements for the succession either by their own free will or upon the advice and wishes of the men surrounding them. Their multiple plans of succession were a failure from the outset. In order to forestall future dissension among the heirs apparent, the caliph upon making his nomination, attempted to delimit their spheres of influence by dividing the Empire among them. This scheme turned out to be unavailing, and the succession remained plagued with the same uncertainty as it was before.

During the ninth century, the succession was largely left to chance and in most cases decided by mercenary soldiers. The procedure of nomination with delimitation of spheres of influence was again attempted but with the same lack of success as before. Near the end of the century, the scheme of nomination was revived again for a short while. In

the tenth century, the viziers followed by the Princes of the Empire chose and deposed caliphs at will.

187 pages. \$2.34. MicA54-2004

THOMAS SMITH: SCHOLAR

(Publication No. 8917)

Norton Downs, Ph. D.
University of Pennsylvania, 1950

Supervisor: Conyers Read

Thomas Smith was born in Walden, Essex County, England in 1513, probably just before Christmas. His parents were, as far as can be determined, of yeoman stock and perhaps his father had some sort of business in the town. Walden was a prosperous place, most of its people being occupied with raising saffron, a profitable crop.

When he was only three, Thomas fell ill so that for the next few years he was unable to participate in the pleasures of normal childhood. Probably at this time, however, he became interested in the history and antiquities of his birth-place which abounded in Roman ruins. He was able to attend the local grammar school, which had only recently been re-established by the vicar, John Leche and his sister Lady Bradbury, widow of Thomas Bradbury former Lord Mayor of London. It is entirely possible that this early education was humanistic, and because of the heretical activities around Walden, Thomas might have been exposed to Lutheran doctrines at this time.

He entered Queens' College, Cambridge in 1526 where John Taylor was his tutor. Queens' was one of the centers of the New Learning, which by this time had come to be equated with Lutheranism. He proceeded B.A. in 1529/30 and in the latter year was elected a Fellow of his college. There is reason to suppose that Smith was a very able student. He probably engaged in plays and other types of extra-curricular college life. In 1533 he obtained his Master's degree.

Now he gave lectures privately in Greek while fulfilling his responsibilities in the schools. He and his friend John Cheke undertook to introduce a new method of pronouncing Greek and were at first successful. At length the Chancellor, Gardiner, took exception and their new method was forebidden. Smith was equally able in the mathematical sciences, and one of his students, Ponet, constructed a globe that showed various horological data. Probably in the 1530's, Smith concerned himself with a better method of writing the English language with the end in view of being able to write every sound spoken.

In 1540 Smith was appointed the first Regius Professor of Civil Law by Henry VIII. He immediately went to the continent to study the subject, and returned in a year with his degree from Padua. His first two lectures, preserved in the Baker Manuscripts indicate that the subject is not popular. He points out the many occupations open to civilians and

tries to stimulate interest. But he was not successful as only one man, Walter Haddon, proceeded to the doctorate in the next eight years.

Somehow Smith became known at court, perhaps through Cromwell or a Cambridge friend. At any rate he seems to have been appointed Secretary to the Queen, and so in 1546 was in a good position to assist his university when it was threatened with dissolution. Perhaps he did more than anyone else to prevent this.

Smith had a distinguished career at Cambridge not only as a scholar, but in administrative positions. He was Vice-Chancellor about 1542. He was also used by his college in business matters. He was not beloved of his students like John Cheke, but he was respected for his considerable learning and his devotion to humanism.

162 pages. \$2.03. MicA54-2005

INALIENABILITY IN MEDIEVAL POLITICAL THOUGHT, ESPECIALLY IN RELATION TO THE GROWTH OF THE MODERN STATE

(Publication No. 8768)

Peter N. Riesenbergh, Ph. D.
Columbia University, 1954

By the middle of the thirteenth century political theorists had developed what might be called a theory of inalienability with regard to the aggregate of executive powers necessary for rule. Often these powers were summed up in the term *imperium*. "Theory" needs qualification, for no legist or publicist ever wrote a specific treatise on inalienability. What we have, rather, is an idea developed over a century by men working in many fields of learning, especially the Law, which idea in retrospect appears as an intricate and systematic body of thought. We know this from a study of the canonist and civilian commentaries upon certain key texts, and of works in political theory. That the theory was sometimes a spur to political action in the world of events we know from an examination of the constitutional documents of the Empire, the several national states, and of many of the Italian towns.

Briefly, the theory holds that there is a sum of powers which must be maintained inviolate by a ruler if in fact he is to rule, and if, in the future, the state is to survive. Basic to this concept is the view of the ruler as temporary administrator responsible for his actions to God, the Law, in the view of some, to the people, and, finally, to his successor to whom he must pass on the executive office intact. Another restraint upon the ruler's freedom of action was the concept of him as one essential to society who must be protected from his own indiscretions in order that he may continue to perform his trust. And here we have in the writings of the legists an application of private law in the field of public law.

The theory is significant also for its relationships with other public law concepts developing simultane-

ously. Most important among these are the idea of the Crown, civilian and canonist theories of representation and consent, and the idea of state continuity - in sum, with those aspects of medieval thought which contributed to the theoretical justification of the new national monarchies, and which, in so doing, ascribed immortality to symbols and institutions of the state.

Initially, however, the doctrine was not formulated with respect to the national state. The internationally minded canonists of the late twelfth and early thirteenth centuries, and the civilians working upon the *Corpus iuris civilis* spread the idea or components of it throughout Europe, from Spain to Hungary, from England to Italy. In political controversy it was first used by publicist supporters of the emperor. Taking their stand in comments upon Augustus and the Donation of Constantine, the legists and theorists fought against the *de jure* independence of the monarchies by attempting to prove the emperor legally incapable of alienating his land and powers. Then, assuming the validity of the maxim "*Rex in suo regno imperator est*," the kings' advocates arrogated the theory of inalienability to their own use. Finally, by the middle of the fourteenth century, the theme was taken up again by imperialist writers, almost in the nature of the swan song of imperial pretension to universal authority.

In conclusion we may note the relationship between inalienability and the concept of the public utility which then as now served as final justification for a ruler's actions. For medieval authors the basic criterion by which to judge the rightness and legality of a surrender of land or authority was the common good. And so a clause was almost universally inserted in the coronation oath which called upon the ruler not to alienate as one aspect of his proper performance of the royal office.

250 pages. \$3.13. MicA54-2006

HISTORY, MODERN

PROGRESSIVISM'S DEBACLE: THE ELECTION OF 1920

(Publication No. 8603)

Wesley Marvin Bagby, Jr. Ph. D.
Columbia University, 1953

The death of Theodore Roosevelt set off a fight for leadership of the Republican Party. General Leonard Wood and Hiram Johnson conducted strenuous campaigns and entry was made by Governor Frank O. Lowden, Senator Warren G. Harding and Herbert Hoover. Wood led in delegates obtained in the primaries though Johnson led in popular votes. Both, however, offended party regulars and Governor Lowden seemed to have the best chance of nomination. Harding's Ohio delegation was split by Wood and Hoover was defeated in California.

The revelation of huge campaign expenditures

stopped the Wood and Lowden booms and opened a welter of back stage maneuvering at the convention. The "smoke filled room," unjustifiably, claimed credit for the choice of Harding. "Tired" and divided on the League progressives were ineffectual. A conservative platform straddled on the League and Calvin Coolidge, symbol of "law and order," was nominated for Vice-President.

There had been support for a third nomination for Wilson before his illness. Wilson wanted to make the League the issue and refused to withdraw, embarrassing others. Attorney-General Palmer announced but William Gibbs McAdoo rejected open candidacy while keeping the door open for a draft. Governor Cox, supported by anti-Wilson bosses, profited by administration divisions.

In convention the Democrats applauded Wilson but refused to name him and cheered Bryan but refused to take him seriously. The administration secured endorsement of the League and a moderately liberal platform but, split between Palmer and McAdoo, let the nomination go to Cox. The consolation prize was the nomination of Franklin D. Roosevelt for Vice-President.

Cox waged a strenuous campaign without support from Bryan or adequate financial backing. He had to champion the administration and, after a "flyer" on the "corruption fund," increasingly emphasized the League. Though attacking reactionaries he offered few reforms.

Harding's statements against the League but for an "association of nations" blurred the issue and kept both irreconcilables and pro-Leaguers in his camp. His speeches were stand-pat, vague and platitudinous but dignity and humanity won him friends.

Disgust with the postwar Wilson administration, the "red scare," concerted business opposition, hyphenated-Americans and the postwar reaction gave Harding a landslide victory which broke the Solid South and swept Democrats out of traditional northern strongholds.

632 pages. \$7.90. MicA54-2007

CHANGES IN THE NEW YORK STATE DAIRYING INDUSTRY, 1850-1900

(Publication No. 8173)

Eric Brunger, Ph. D.
Syracuse University, 1954

The five decades between 1850 and 1900 were transitional ones in the history of New York agriculture. New York farmers, like their fellows in other eastern states, were faced with ever-increasing western competition. Unlike many of the others, the New Yorkers, essentially through the adoption of a few agricultural specialties, were able to meet this challenge successfully. As a consequence, New York State did not suffer severe depopulation of its rural areas and abandonment of farms; indeed the number of farms and the number of farmers increased during

these years. The three specialties that rose to prominence were dairying, poultry raising, and fruit and vegetable farming. In each of these, significant changes took place.

Dairying shifted from a simple farm industry to a well-organized and complex business. Commencing in 1850 with the beginnings of a great cheese industry, the end product gradually shifted under the pressure of both western competition and eastern urbanism. Though New York led the rest of the nation in the production of both butter and cheese for these fifty years, by the end of the century western states were exceeding her production and New York had turned to the supply of fluid milk for the city consumer.

The milk producer was greatly affected by the growing demand for fluid milk. He was encouraged to try such innovations as silos and winter dairying; to cultivate the newer forage crops such as alfalfa; to watch his cattle more carefully and eliminate the poor milkers from his herd; to try blooded cattle, or at least grades of the pure bloods; to improve his barns and milk handling facilities; in short, to improve his dairy farm management. It is true that improvement came slowly, but by the end of the century milk production was more than double what it had been forty years before though the total number of cattle had increased by only 25 per cent.

Changes in the dairy industry were not confined to the milk producer, however. The fairly simple and direct relationships between producer and consumer which characterized the early years of the industry were replaced by a highly complex system of manufacturing and marketing arrangements. Largely through the activities of merchants, the markets for cheese and butter were increased, formal agencies like market days and boards of trade were established, and state and national dairy associations were founded. Eventually wholesale and retail dealers, manufacturers, and commission merchants came to handle certain stages in the distribution of the product formerly handled by the milk producer himself. This was particularly true in the cases of the cheese industry and the fluid milk industry. Whereas in former years the farmer was also the cheesemaker and cheese merchant, later he assumed the position of milk producer only. The manufacture and sale of his products as cheese and butter became a business handled by city merchants and private manufacturers.

During the last two decades of the century the great demand for fluid milk by the city populations steadily reduced the supply available for the manufacture of butter and cheese in New York State. The supply of the city market with fluid milk, a development pioneered by the Erie Railroad, also introduced new problems. Those of a technical nature, such as cooling and shipping the milk safely were solved; those of an economic and social nature proved to be more difficult. The relationships between the dealers and producers were generally satisfactory during the first few years, but later led to serious differences culminating in economic warfare during the last two decades of the century. The problems of a pure milk supply were also difficult of solution, and unclean, adulterated, and watered milk led eventually to

government intervention to assure the consumers that their milk was as pure as scientific knowledge and state control could make it. The drive for governmental regulation was the result of both social and economic forces. Certain philanthropic leaders, social organizations, the medical profession, and the press assumed leadership in the fight in the interest of public health, and certain producers groups were active in the interest of fair dealing and better returns to the farmer. By the end of the century the consumer could be fairly certain that he was getting a quart of milk that met state-enforced standards for purity.

In short, many more people than farmers were involved in the fortunes of the dairy industry. The best evidence that the dairying specialty was a sound choice on the part of New York farmers is undoubtedly the great extent of that industry in the Empire State today.

This study was based on materials found in the published transactions of agricultural societies, in reports of Federal and State agricultural agencies and other government documents, and in agricultural journals and newspapers. Additional data was obtained through the examination of account books and other manuscript sources and through interviews and correspondence. 306 pages. \$3.83. MicA54-2008

**THE DECLINE AND REVIVAL OF THE
SOCIAL GOSPEL: SOCIAL AND
POLITICAL LIBERALISM IN AMERICAN
PROTESTANT CHURCHES, 1920-1940**

(Publication No. 8623)

Paul Allen Carter, Ph. D.
Columbia University, 1954

Toward the end of the nineteenth century, there emerged in American Protestantism a socio-religious movement known as the Social Gospel, which was intended to apply religious insights and judgements to social institutions considered collectively. In 1920, this movement was still a force in Protestant thinking in the United States, as evidenced in the denominational press. But already adverse currents had begun to flow; the impact of World War I, Prohibition, Fundamentalism, conservative business pressures, and (above all) secularism, together with the decline in class-status of the clergy and the attack upon the Social Gospel's theological presuppositions by European Christians, had the effect of diluting and distorting Protestant social liberalism, as the denominational press of 1929 attests.

Recovery of a potent Social Gospel – which the sources indicate was under way by 1932 – was a function of factors both internal and external to Protestantism. Externally, the Social Gospel's revival was facilitated by the educative effect of the Great Depression and the experience of the New Deal; internally, by an incorporation of European theological perspectives into American religious ethics, and by

the increasing involvement of the American churches on the most urgent social front of the day – the international – through their participation in the Ecumenical Movement. Recovery, however, did not mean repetition; thanks to the "neo-orthodox" theology associated in this country with the brothers Niebuhr, the Social Gospel of 1940 was a distinctly different thing from the Social Gospel of 1920. Particularly in the churches' experience with pacifism in the 1930's it became clear that their social ethics would thenceforth have to be based upon a provisional pessimism set in the framework of an ultimate religious optimism. 423 pages. \$5.29. MicA54-2009

**AGITATION FOR PENAL REFORM
IN TENNESSEE, 1870-1900**

(Publication No. 9216)

Jesse Crawford Crowe, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Henry L. Swint

Civil War and Reconstruction bequeathed Tennessee a perplexing prison problem which lingered for thirty years. In the 1830's agitation for reforms in the administration of justice resulted in the establishment of a state penitentiary. By adopting the Auburn system of prison discipline the state soon enjoyed the reputation of having a modern prison. But the gradual increase in prison population and the emphasis on prison profits destroyed this early prestige. By 1850 only the profit-making ability of the prison won praise. The disruption of remunerative prison operations during the war and the increase in the number of Negro convicts prevented any return to prison progress. Faced with a large debt and insufficient revenues, Tennessee leased its felons to industrialists.

First sought as a source of cheap labor by railroad and mine operators, convicts soon became valuable as strike breakers in the coal mines of East Tennessee. This fact, together with the state's realization of convict profits and the Bourbon emphasis on economy, fastened leasing on the state for twenty-five years. Although Republicans and labor organizations opposed leasing, the cries of the few who regarded the departure as non-reformatory in nature were scarcely heard.

Leasing resulted in many abuses. Accidents, escapes, and deaths greatly increased after the state surrendered control of its felons. Moreover, convicts were often beaten by lessees for failure to perform their mining tasks. State health officials and newspapers publicized abuses which led to legislative investigations of the prison system. Although a few laws requiring better treatment of convicts were enacted, the emphasis on economy prevented any change in prison labor.

Meanwhile, the evolution of penology in the United States resulted in the introduction of new reformatory

features in many northern prisons. Progressive-spirited Tennesseans also urged the adoption of new techniques in their own penal system. Expressing alarm at the increase in crime, humanitarians recommended many changes in the administration of justice on the ground that existing methods of punishment failed to deter others from crime.

Although humanitarian motives were influential in the establishment of a new prison system in the 1890's, economic factors played a more significant role. The growing significance of labor in Tennessee in the last two decades of the century made convict labor competition an issue in state elections. Yet the dominant party retained leasing, justifying its action on grounds of economic necessity.

The abolition of leasing – the most significant change in the penal system – was finally accomplished by organized miners in the 1890's. Tired of political promises and especially infuriated by the use of convict strike breakers, they stormed the prison stockades and released the convicts. The action resulted in such burdensome expense to the state and the principal lessee, the Tennessee Coal, Iron and Railroad Company, that neither party again regarded leasing as profitable.

In 1898, with the opening of a modern prison, Tennessee entered a new era in penology. Agitation by newspapers, health authorities, clergymen, and progressive-spirited citizens resulted in the inauguration of reformatory measures. In addition to a new labor policy, the system included such features as classification of convicts, segregation of youthful from older convicts, a prison hospital, and a board of pardons. Moreover, local governments were empowered to build youthful reformatories. Numerous other improvements appeared during the Progressive Era. Although only a minority regarded reformation as a leading objective of incarceration, Tennessee displayed a greater interest in the social aspects of crime and punishment and attempted to solve prison problems as they arose.

355 pages. \$4.44. MicA54-2010

**LUIS GONZALEZ OBREGON: 1865-1938,
CHRONICLER OF MEXICO CITY**

(Publication No. 8646)

Leonardo Calderón De Morelos, Ph. D.
Columbia University, 1954

Luis González Obregón (1865-1938) has been considered for more than half a century as a reputable Mexican historian and the outstanding interpreter of the colonial life of Mexico City; until the present, however, no comprehensive examination of his writings had been attempted. The purpose of this dissertation is therefore to study his life and times, and to determine the source, scope, and nature of his varied literary production.

González Obregón was born in the provincial city of Guanajuato, Mexico. In 1867 his family moved to

Mexico City, where he received his formal education and resided until his death. Modest but comfortable economic circumstances enabled him to devote his life to historical research, publication of bibliographies and rare documents, editing of historical and literary journals, among them the important *El Liceo Mexicano* (1885-1892), and the writing of many descriptions of colonial Mexico City and narratives of its traditions, legends, customs, and historical episodes. He was also responsible for the reorganization in 1909 of the Archivo General de la Nación, a storehouse of priceless historical documents comprising primarily the archives of the viceregal regime and the Inquisition. Although almost totally blind during the last twenty years of his life, he was able to fulfil his duties at the Archivo, first as Professor Honorario (1918) and a year later as Jefe de Investigaciones Históricas, a post which he retained until his death.

His emergence as a writer in 1885 coincided with an awakening interest in the past of the country, and of Mexico City in particular. His teachers and colleagues were devoted historians and bibliophiles, literary renovators of Mexican literature like Ignacio Manuel Altamirano, and the folkloric poet Guillermo Prieto. The works of González Obregón show both currents: a dedication to erudite scholarship and a zeal for the fostering of an indigenous Mexican literature based upon popular themes.

In spite of his multiple contributions as historian, compiler, and biographer, González Obregón's greatest claim to literary reputation lies in the numerous scenes of colonial life which he published in newspapers mainly between 1885 and 1917, and which at intervals he collected into separate volumes with diverse titles. These narratives include the following categories: historical descriptions of the salient features of the city, such as buildings, streets, and squares, which acquired prominence during the colonial period; reconstructions of traditions and legends which accumulated through three centuries of oral transmission; accounts of historical episodes of unusual interest; descriptions of viceregal ceremonies, religious processions and autos de fe; and scenes portraying the customs, manners, and folklore of the inhabitants from the conquest (1521) to the beginning of the wars of independence (1810).

The sources for all these narratives can be traced to the chroniclers of the conquest, ecclesiastical historians of the seventeenth and eighteenth centuries, diaries kept by the inhabitants of the city, accounts of travelers, trial records of the Inquisition, and official documents of the viceregal government. In all his accounts, whether depicting historical events or reconstructing legends, González Obregón is characterized by a scrupulous attention to historical documentation, and by a conscientious effort to separate factual information from imaginative aspects. His interest as a narrator is centered upon the isolated but picturesque site, event, or personage, and his efforts are directed toward making history attractive and fascinating without destroying its veracity. His greatest merit as a writer lies in his ability to achieve a subtle blend of fantasy and

authenticity, and to utilize both formal history and oral tradition to reconstruct the legendary past of Mexico City. 239 pages. \$2.99. MicA54-2011

**GERMAN FOREIGN POLICY, 1923-1926:
STRESEMANN AND PRESS OPINION**

(Publication No. 8659)

Enno Franzius, Ph. D.
Columbia University, 1954

Since the dominating factor of Germany's foreign policy between 1923 and 1926 was her relationship with France, this study is largely an account of French-German relations and the reactions of the German partisan press to them and to Stresemann's course. The work opens with a brief review of the reparation problem from 1918 to the occupation of the Ruhr by France and Belgium in 1923. The second chapter is chiefly devoted to a short account of the German parties in the Weimar Republic and the organs chosen to reflect their views: for the Socialists the Vorwärts, the Leipziger Volkszeitung, and the Sozialistische Monatshefte; for the Democrats the Berliner Tageblatt and the Frankfurter Zeitung; for the Centrists the Germania; for the Populists the Kölnische Zeitung and the Deutsche Allgemeine Zeitung; for the Nationalists the Deutsche Tageszeitung and the Berliner Lokal-Anzeiger; for the Communists the Rote Fahne; and for the National Socialists the Völkischer Beobachter.

The main part of the work begins with the accession to office of Stresemann in August 1923. Failing to reach a compromise with France, he abandoned passive resistance, only to confront the French-fostered Separatist movement in the Rhineland. Amid confusion and rebellion at home, his wise domestic course, his stringent reforms, and his balanced policy of resistance and compliance to French demands preserved the Reich and encouraged Britain and the United States to take a more active interest in the affairs of the continent. Thus, British intervention led France to terminate her attempt to separate part of the Rhineland from the Reich.

Meanwhile, an American initiative evolved into the Dawes Plan, which removed the reparation problem from international politics, linked Germany's reparation payments to her capacity to pay, and provided for the evacuation of the Ruhr in the summer of 1925.

But the improvement of German-Allied relations that resulted from the acceptance of the Dawes Plan was of short duration. Shortly before 10 January 1925, the Allies announced that as a result of German disarmament infractions they would not evacuate the Cologne zone on that date. Later, the French Prime Minister openly linked the occupation of the Rhineland with French security. To emerge from the impasse thus formed, Stresemann proposed a security pact. This initiative led to the Locarno Pact of October 1925. The Pact was to become effective when Germany acceded to the League. But

the demand of other powers for permanent Council seats conflicted with her expectation to enter the Council alone. As a result, her admission was postponed to September 1926. Meanwhile, in April, Germany concluded with the Soviet Union a treaty of friendship. This instrument assured the Union that Germany would not join an anti-Soviet coalition in peace or war.

Throughout this period Stresemann's foreign policy was supported by Socialists, Democrats, Centrists, and Populists. The Socialists and a Democratic wing were often prepared to make greater concessions to the Allies than he and thus frequently weakened his position in international negotiations. The Nationalists generally opposed his course, but during the years under study seemed unwilling to see it fail. The Communists and National Socialists opposed his policy on principle and classified him with Germany's foreign enemies.

The writer concludes that Stresemann's national aims and method paralleled the interests of European peace and that he contributed perhaps more than any other statesman to guiding Europe out of the postwar turmoil. His cardinal constructive achievement between 1923 and 1926 was the restoration of the Treaty of Versailles as the basis of French-German relations.

453 pages. \$5.66. MicA54-1785

**MEXICO AND THE PACIFIC, 1540-1565:
THE VOYAGES OF VILLALOBOS AND
LEGAZPI AND THE PREPARATIONS
MADE FOR THEM**

(Publication No. 8675)

André Gschaedler, Ph. D.
Columbia University, 1954

This study concerns the two voyages from Mexico to the western Pacific which pioneered the Manila Galleon trade. The first voyage prepared the way for the second, which was the turning point in the history of Spanish enterprise in the Pacific. Not only did the second voyage leave a permanent Spanish settlement in the Philippines, but it discovered a navigable return route from those islands to America, without which no trade would subsequently have been possible. These voyages are examined against the background of Mexican society with emphasis given to their organizational features as an aid in understanding the life of the period and the many difficulties which stood in the way of sending out overseas expeditions.

The wealth of the Americas did not fully satisfy the Spaniards for their government, and the fabulous Far East still exerted a powerful attraction. The Spaniards believed that there were rich spice islands far to the west of Mexico situated outside the sphere claimed by Portugal under Pope Alexander VI's famous bull (1493) and the Treaty of Tordesillas (1494) that divided the unclaimed areas of the world between the two nations.

In 1540 a partnership was formed between Pedro de Alvarado, governor of Guatemala, and Antonio de Mendoza, viceroy of New Spain (as Mexico was then called) to send an expedition from Mexico to the "Western Islands" of the Pacific. The departure of the fleet was delayed, however, because of the Indian rebellion of New Galicia which cost Alvarado his life. It was not until October 30, 1542, that Mendoza could send Ruy López de Villalobos on an expedition to the islands which this navigator was to call Philip-pines. During the voyage the Spaniards suffered many hardships and were driven to the Spice Islands, south of the Philippines, which were claimed by the Portuguese. There numerous difficulties arose because the Portuguese resented the presence of the Spaniards in this area while the latter wanted to wait for orders from Mexico before leaving. Finally, Villalobos died and the survivors of the expedition were repatriated by the Portuguese.

One of Villalobos's ships, the *San Juan* attempted in vain to return to Mexico. Such attempts had been made by other Spanish navigators but had been thwarted by lack of knowledge concerning the winds and currents of the Pacific. These required that the eastward sailing be made at about 40° Lat. N. — that is, at a much high latitude than the westward.

The discovery of the return route was made by the Legazpi expedition (1564-65), which did not experience the same hardships as Villalobos and his companions. From the newly-established Spanish settlement of Cebu in the Philippines the ship *San Pedro* guided by the friar-navigator Andrés de Urdaneta, succeeded in returning to America in October, 1565, thus pioneering a route which was to be used by Spanish galleons for over two hundred and fifty years.

Because of the physical, social and economic conditions of sixteenth-century Mexico, the organization of expeditions like those of Villalobos and Legazpi presented many obstacles. On both occasions nearly four hundred men left on a voyage of unknown duration. Food and supplies had to be provided for them, and, in Legazpi's case, the whole of his fleet, which included the largest vessels ever constructed in America, had to be built on the Mexican coast.

The Spanish government and its representatives in Mexico were never permanently discouraged by the inevitable difficulties and delays of their enterprise and by their repeated failures. And when at length Legazpi's expedition achieved success, the stage was set for lasting trans-Pacific commerce between the Philippines and Asia on the one hand and Mexico and Spain on the other.

197 pages. \$2.46. MicA54-2012

THE IDEA OF AGITATION: A STUDY OF THE SOCIAL AND POLITICAL IDEAS OF WALTER BAGEHOT

(Publication No. 8678)

John Burt Halsted, Ph. D.
Columbia University, 1954

This study uses Walter Bagehot's remarks on agitation to offer a coherent statement of his most important social and political ideas, and to make clear the moderate liberalism of his point of view. It deals with Bagehot's literary and economic writings only to illustrate this point of view and to exemplify his social and political attitudes.

The introduction sketches Bagehot's life (1826-1877). It follows him through his education, and traces his career as essayist, banker, editor of *The London Economist* and as author of such books as *The English Constitution* and *Physics and Politics*.

The first chapter, "Agitation and National Character," introduces those remarks of Bagehot's on agitation and agitators upon which the study is based. It offers these in the light of Bagehot's analysis of the national characters of the English and the French which led him to feel that the "stupidity" of the English permitted them to enjoy the benefits of the education agitation could bring, while the volatile and dogmatic French had had to submit to the despotism of Louis Napoleon in order to avoid the destructive effects of revolution.

Chapter II, "The Irrationality of Man," discusses Bagehot's interpretation of the nature of man as still deeply influenced by primitive, irrational characteristics, in order to explain how it was that he so feared revolution that he was willing that in France the valuable effects of agitation be set aside lest what he believed to be the first requisite of society, stability, be lost.

The next chapter, "The Springs of Progress," outlines the process by which Bagehot felt men might progress beyond the need for despotic control to the freedom which will permit agitation. It traces how primitive men first established a "cake of custom" to discipline themselves, how imitation and persecution established that cake more firmly, and yet offered the means by which change might be generalized. It closes in emphasizing Bagehot's contention that progress beyond the despotism of tradition depends upon the establishment of a government by discussion and the existence of wide toleration.

Chapter IV, "The Cultivated Man," presents the object at which progress through agitation should aim. By describing the qualities which Bagehot felt go to make up the cultivated man, the "experiencing nature" and the recognition of the complexity of life combined with a willingness to order it with theorization, it indicates the kind of animated moderation Bagehot sought to promote and the political attitude of moderate liberalism which agitation should generate.

The fifth chapter, "Agitation in England," shows how Bagehot's general approval of the English constitution and the English national character was

tempered by concern for lessening the "stupidity" of the middle-classes which ruled England after 1832, and by his greater concern after the Reform of 1867 enfranchised the lower classes.

The closing chapter, "The Moderate Liberal," shows the extent to which Bagehot himself in his various activities exemplified his ideal of agitation. It treats briefly his longer literary, biographical, political, and economic writings, and more extensively analyses his writings for *The Economist*. It shows how all these writings sought to generate the attitude of moderate liberalism which characterized Bagehot's own definition of the cultivated man. The essay ends with a restatement of this attitude, which was Bagehot's own, and an emphasis upon how useful and important the wider dissemination of such a point of view may be. 199 pages. \$2.49. MicA54-2013

REVOLUTIONISM AND VANGUARDISM:
LENIN ON TRADE UNIONS
UNDER CAPITALISM, 1893-1917

(Publication No. 8679)

Thomas Taylor Hammond, Ph. D.
Columbia University, 1954

During the 1890's, in the early years of his activities as a professional revolutionary, Lenin seized upon trade unions as important means for developing the unity and revolutionary spirit of the Russian proletariat, and he urged his fellow Social-Democrats to do all they could to aid the union movement. In the later 1890's and early 1900's, however, he got into a dispute with a group of Social-Democrats known as the "Economists," who, he said, were putting too much emphasis on trade unions and were neglecting political work. The "Economists" believed that the trade union fight for economic reforms could achieve greater practical results, whereas Lenin argued that the political struggle against the tsarist government should be combined with the economic struggle against the employers, and that both these struggles should be waged on a revolutionary basis.

While the "Economists" claimed that the "conscious" leaders were relatively unimportant in the development of the labor movement, Lenin argued that the workers would inevitably abandon the cause of revolutionary socialism unless a vanguard of carefully selected revolutionaries, organized in the Party, took over the leadership of the labor movement and directed it along the proper path. The workers, he said, would tend to become "Reformists," in spite of the fact that no significant improvements in their condition could be achieved except by revolution. Because of this, he said, the revolutionary Party should be rigidly restricted to a conscious elite, whereas the trade unions would be open to all workers. Party cells in the unions would see to it that the unions were controlled by the Party, although this fact could if necessary be kept secret. The unions, in short, would be "front" organizations for the Party.

During the Revolution of 1905 Lenin got into a dispute with the Mensheviks over the question of whether emphasis should be put on such organizations as trade unions or on preparations for an armed uprising, with Lenin choosing the latter. After the decline of the Revolution, a similar controversy was carried on by Lenin against the "Liquidators," who argued that the illegal underground Party should be abolished in favor of a mass Party and such legal organizations as trade unions. He simultaneously fought against the "Boycotters" who felt that all legal work should be abandoned. Lenin's view was that the underground Party was the most important organization of all, but that legal work, as in the trade unions, was also necessary.

The behaviour of many trade unions during World War I, said Lenin showed how unions could wander astray onto the path of "Reformism." Some of the unions in countries like England and France, he said, abandoned revolution in return for a share in the profits of capitalist imperialism. A logical result of this, he said, was that they deserted Marxist internationalism for "Social-Chauvinism." During 1917 Lenin had rather little to say about trade unions, since two other types of organizations tended to overshadow the unions in his thinking – the soviets and the factory committees.

Throughout these different periods the basis of Lenin's ideas regarding trade unions can be summarized in two words – revolutionism and vanguardism. By revolutionism is meant his insistence that socialism could be brought about in Russia only through revolution and not through reform. Since only a minority of the working class followed Lenin's revolutionary ideas spontaneously, he insisted that it would be necessary for the trade unions to be controlled and the revolution to be led by a vanguard of conscious revolutionaries organized in the Party. These two principles – revolutionism and vanguardism – did much to determine the nature both of the Bolshevik Party and of the Soviet regime which it established.

288 pages. \$3.60. MicA54-2014

FRENCH CONCEPTS OF
MILITARY STRATEGY (1919-1939)

(Publication No. 8681)

Donald Joseph Harvey, Ph. D.
Columbia University, 1953

The debacle of the French military forces in 1940 implied a failure of the military strategy formulated by the military and civilian leaders of interbellum France. In the development of the French concepts of military strategy from 1919 to 1939, the ideas of Marshal Henri-Philippe Pétain were dominant.

To prepare for a future conflict, Pétain relied heavily on his assessment of the experiences of World War I. These "lessons" included a recognition of the decisive importance of the fire-power which issued from the machine-gun and artillery piece. Furthermore,

fortified, defensive positions had been efficaciously established along a continuous front of men and matériel and had resulted in the inhibition of maneuver and of offensive operations.

The doctrine which Pétain advocated, therefore, heeded these lessons and proposed a defensive strategy for the armed forces until the nation-in-arms produced sufficient weapons to gain superiority over the enemy in fire-power. To succeed in this "holding" action and yet to prevent a sudden irruption of enemy troops in the event of a surprise attack, the French provided themselves with a covering force to give the cadre-conscript army time to mobilize and to man the continuous front.

The fortification plans, which Ministers of War Paul Painlevé and André Maginot translated into reality, were designed to buttress the defensive strength of fire-power and to guard the nation until mobilization was complete. The Maginot Line was conceived also as a means of guaranteeing the integrity of French soil and of protecting the frontier population against a possible recurrence of the World War I experience of German occupation. The location of French natural and industrial wealth in the border regions as well as the manpower shortage seemed to be problems possible of solution by recourse to a series of fortifications.

After Pétain resolved the differences of opinion on the type of defensive frontier organization to be utilized, Painlevé and Maginot secured the appropriations from parliament for fortifications to cover the Franco-German border. The northern frontier was left unfortified for various reasons.

Generals Maxime Weygand and Maurice Gamelin in turn succeeded to the posts vacated by Pétain in the 1930s. The two Generals were confronted not only with the question of strengthening, extending and manning the Maginot Line, but also with the necessity of deciding on the mechanization and motorization of the French army.

French armored doctrine had evolved during the 1920s and had viewed the tank as an infantry weapon. Weygand and Gamelin began to free the tank from being bound strictly to the infantry command and began to create separate mechanized divisions. This process was a slow, halting one and the majority of tanks by 1939 remained dispersed and at the disposal of the existing arms of service. The French failure to realize fully the tactical value of massed armor was paralleled by the inability to foresee the tactical importance of airpower.

In opposition to the spirit and content of the official strategy stood Charles de Gaulle and Paul Reynaud. Both men denied the continued validity of the lessons of World War I in face of the revolutionary technological advances in mechanization. To de Gaulle and Reynaud, the advent of the tank demanded a radical revision of contemporary military concepts. Professional armored corps were recommended by the two critics as the only logical means of capitalizing on the potentialities of the new matériel.

Despite the warnings of de Gaulle and Reynaud, French political and military leaders maintained their adherence to a defensive military strategy which

planned to protect eastern and northeastern France with fire-power encased in the concrete of the Maginot Line. In the north, where no comparable fortification was undertaken, the French did not appreciate the full extent of their danger since their armored and air doctrine failed to envision the tactical effects of massed mechanized forces. Serious errors thus existed in the French concepts of military strategy (1919-1939) and contributed to the defeat of France in 1940.

242 pages. \$3.03. MicA54-2015

SCIENTISTS AND SOCIETY IN THE UNITED STATES, 1900-1940: CHANGING CONCEPTS OF SOCIAL RESPONSIBILITY

(Publication No. 8552)

Charles William Heywood, Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor Roy F. Nichols

From 1900 to World War I American scientists' conception of their role in society was characterized by pride and confidence in the contributions of science to the material, intellectual, and moral progress of mankind. In this period scientists were quite concerned to convince the public of the value of basic science as well as applied science, feeling that basic science had long been neglected in America and that the public did not appreciate its fundamental importance for the continued technological progress that was so widely praised. The idea of there being any special responsibility on the part of scientists for the control or use of scientific knowledge or for the more careful definition of the end toward which they were progressing had not yet made much of an impression.

World War I stimulated cooperative research and instigated a vigorous discussion among scientists as to its desirability. The National Research Council was the chief organizational expression of this trend. The war also drew many scientists from the university laboratories into industrial and government projects, which caused concern that basic science would again be neglected. However, the contributions of scientists to the war program so enhanced their reputation in the eyes of the public that the long-term effect of the war was probably to lead to wider financial support for research. This in spite of the fact that the contributions of science to more terrible weapons of warfare brought on some bitter attacks against science; these criticisms generally being expressed in the years before the United States declared war. While the war stimulated cooperation among scientists and scientific organizations in the United States and among the Allies, it was destructive of that pre-war confidence of scientists that the advance of science would lead to international organization and world peace, and some doubts began to appear as to whether the progress of science and the progress of mankind were synonymous terms.

Between the wars the idea that scientists have a

social responsibility beyond the laboratory gained adherents. Scientists devoted more attention to informing the public of scientific matters and efforts were made to "humanize" science by fostering the study of the history of science. In spite of this the 1920's and 1930's saw the rise of a "revolt against science." Complaints were voiced that scientific advance had been too rapid to allow for the necessary social, economic, and intellectual adjustments; that scientists had made too extravagant claims as to the benefits of science and the applicability of the scientific method; that science over-emphasized the mechanical and materialistic and undermined religion and morals; that science dominated the curriculum of the schools; that scientists had failed to recognize their social responsibility as citizens; and that science was weakening society physically and intellectually.

Faced with such criticisms scientists reacted in various ways. At one extreme were those who insisted that previous emphases had been correct. At the other extreme were those Marxists who emphasized a form of social responsibility that would make science an instrument of the proletarian revolution. In between was a growing body of scientists who felt that earlier concepts of the social role of the scientist had been naive, that the scientists had responsibilities as citizens, as members of a highly complicated social order that was out of joint in many places, and as human beings; responsibilities that were at least as binding as those faced by the scientist as scientist. Yet this latter group was finding that while agreement might be reached as to social responsibility in the abstract, it was very difficult to come to any common ground in defining that responsibility in concrete terms.

198 pages. \$2.48. MicA54-2016

**SOME CUSTOMARY PRACTICES OF
RURAL LIFE, 1870-1913, IN PARTS OF
INDIANA AND JEFFERSON COUNTIES,
PENNSYLVANIA**

(Publication No. 8897)

Phil Rowland Jack, Ph. D.
University of Pittsburgh, 1954

This dissertation was undertaken in an effort to achieve two major aims: to determine whether there were aspects of rural life which were traditional in nature, even amounting to a way of life which could be described to some extent; and to find out whether such a descriptive work would point out that more extensive and more detailed investigations might be justified by a resultant growth in the knowledge needed to recreate faithfully the past. The study was restricted to the years 1870-1913, and to the Townships of North, South, East, and West Mahoning in Indiana County, Pennsylvania, and Porter, Perry, Ringgold, and Young in Jefferson County, Pennsylvania. By consulting newspapers of the period, and by making

inquiries among those who lived during the period, in conjunction with public records and other documentary items of a material and nonmaterial character, the homes and home-areas, the customary rural household technology, the customary farm technology, the home-centered social aspects, and the community-centered social aspects of the people were investigated.

From the data assembled concerning the sections under consideration, two outstanding characteristics of the time and area were noted: the seasonal nature of rural life, and the regionalism that was prominent. It was apparent that a calendar did not dictate to the people what was to be done: the coming or passing of the seasons was the best indication.

At the same time, some accretions were made by rural life. The acquisition of methods for utilizing natural gas, electricity, and the internal combustion engine proved to be inimical to the continuation of elements of a way of life that had once been predominant. The results of these acquisitions expanded the mental and physical horizons of the rural people of the area. Primary tools were passing in importance; ways of production were no longer shared by all; the relative isolation of the area was demolished; and a literary tradition began to replace the old oral and example-based tradition. The tenor of life in the area, in 1870, had been determined by the local-area community. By 1913, the impetus for change came from nontraditional industrial and literary centers not located within the confines of the local community.

610 pages. \$7.63. MicA54-2017

**ILL FEELING IN THE ERA OF GOOD
FEELING: WESTERN PENNSYLVANIA
POLITICAL BATTLES, 1815-1825**

(Publication No. 8558)

James Arthur Kehl, Ph. D.
University of Pennsylvania, 1954

Supervisor: Roy F. Nichols

In the decade following the War of 1812 regional allegiance was substituted for party loyalty, and nowhere was the conversion more conspicuous than in Western Pennsylvania. Leadership in this endeavor was shared by members of the defunct Federalist Party and Democratic-Republicans who did not endorse the faction in control of state politics. Unable to dislodge the incumbents from office, these Republicans adopted the spirit of reform and quickly became the senior partner in the coalition.

The two groups campaigned under the label of Independent Republicanism, but their success was limited almost exclusively to the Pittsburgh area. Although their program of regionalism was aided by the state constitution which bestowed extensive appointive powers on the governor and caused every part of the state to become afflicted with an anxiety to have one of its own men chosen governor, the

activity of the coalition frequently added to the political confusion. It did, however, force the Delegate or Patent Republicans to counter with regional proposals of their own in order to keep the Independents submerged.

The Independents, therefore, led the way in dramatizing issues that were not national, but local – issues that were peculiar to certain counties or economic interests. Some counties and interests sponsored aids to commerce, some solicited encouragement for manufacturing, while others wanted a greater volume of currency or improvements to transportation facilities. Both political factions bombarded the public with arguments in behalf of these issues, arguments reflecting the narrowest outlook and tending only to degenerate this regionalism into localism. Politics approached a strictly personal basis. County was pitted against county, and the developing town culture of Pittsburgh and such boroughs as Meadville, Washington, and Greensburg against the farmers of the countryside.

The former rivalry was encouraged by multi-county districting which, at one time or another, caused each of the fifteen western counties to share senatorial and congressional seats with at least one other. This situation aroused residents in every county to have candidates chosen from their own constituency, but cutting across this desire was the farmer's skepticism of the lawyer, banker, manufacturer, and the embryo urban industrialism they were promoting through the Independent Republican movement. These townspeople countered, however, with a denunciation of the farmer for his agricultural inefficiency and political conservatism. In effect, the attitudes developed by every county on each of these issues conditioned the local character of political alignments; and these alignments, in turn, caused the people of Western Pennsylvania to look inward instead of outward during this decade.

There were instruments available to curb this disagreement, but these weapons, namely the newspapers, local political committees, and other non-political alignments were not equal to the task, often serving to incite further division. The western counties were unable to produce any permanent political organization in these years. The only definable political clique throughout the region was the Washington Club, an Independent faction which enjoyed only limited success against the Patent Democracy of the farmers. Even the concentration of Independent strength in Pittsburgh could not institute satisfactory party discipline although two leaders of national reputation, Henry Baldwin and William Wilkins, did come to the foreground in Allegheny County. Baldwin was definitely an Independent in these years while Wilkins, relying on his personal popularity for success, could not be identified with any faction.

When the 1818-1822 depression passed, a semblance of order was discernible for the first time in this transitional decade. Farmers and townspeople recognized their interdependence; money became available for both manufacturing and internal improvements; and interest in the national government and party politics was revived with the emergence of

the Jackson personality to capture Western Pennsylvania's popular imagination.

404 pages. \$5.05. MicA54-2018

THE AMERICAN WHIG:
WILLIAM LIVINGSTON OF NEW YORK

(Publication No. 8699)

Milton Martin Klein, Ph. D.
Columbia University, 1954

This study emphasizes Livingston's New York career, a phase of his active public life that is generally less well-known than his later role as Governor of New Jersey from 1776 to 1790. From a variety of hitherto unexploited sources, it has been possible to reconstruct his early life and to reveal his importance as a representative of colonial liberal thought. Lawyer, man of letters, landlord, educator, and, above all, an inveterate pamphleteer, Livingston was an impressive and articulate spokesman of the Whig aristocracy that played such an important part in leading the colonies down the road to Revolution. The title of the dissertation, taken from one of Livingston's many journalistic enterprises, suggests the root of his philosophy: uncompromising opposition to religious authoritarianism and political absolutism.

Following a brief discussion of the origins of the Livingston family in New York, the study traces Livingston's career from his youth in Albany and New Haven to his tempestuous entrance into New York politics around 1748. Emphasis is placed upon five great contests in which he engaged: the struggle with the Anglicans over the founding of King's College (Columbia); the dispute with the De Lancey-Johnson faction over the conduct of the French and Indian War; the opposition to Lieutenant Governor Colden's attempts to place the New York judicial system under closer control of the Crown; the agitation against the Parliamentary taxes after 1765; and the conflict with the Anglican Church over the issue of American bishops. A detailed examination is also made of Livingston's business activities, his intellectual interests, and his career as a lawyer.

In the King's College affair Livingston is revealed as a vigorous advocate of religious freedom – limited in scope, it is true – against a measure clearly designed to further the aspirations of the Church of England to established status in New York. Nominally a supporter of the De Lancey "party," Livingston turned on Lieutenant Governor James De Lancey when the chief executive allied himself with the Anglicans on the college issue. In the *Independent Reflector*, a weekly journal, Livingston, William Smith, Jr., and John Morin Scott – the New York "Triumvirate" – rallied members of the dissenting religious sects and the political foes of De Lancey into a new Livingston party. In 1758 it secured control of the legislature and retained it until 1768. During this period the trio led the movement of popular protest against the Grenville and Townshend measures, surrendering it to the

Sons of Liberty – an organization of which they were not members – when the tide turned too radical to suit their conservative sensibilities. When political exigencies caused the Livingstons to attempt a rapprochement with the Sons, Smith broke with his colleagues, and the triumvirate was destroyed. By this time, however, Livingston was in New Jersey, where he continued to serve as an active spokesman of the patriot cause.

During the Revolution he provided his adopted state with inspired leadership as Governor, securing re-election for fourteen consecutive terms. Throughout his public life he remained devoted to the principles of religious nonconformity and political liberty that had originally propelled him into the public arena a half-century earlier.

799 pages. \$9.99. MicA54-2019

THE DEVELOPMENT OF AN ECONOMIC POLICY IN THE EARLY REPUBLICAN PARTY

(Publication No. 8174)

Arthur Matthias Lee, Ph. D.
Syracuse University, 1953

The purpose of this study is to discover the origins and motives of the economic legislation enacted under Republican sponsorship during the Civil War period, tracing the enlargement of Republican party policy from an emphasis primarily on anti-slavery to the promotion of economic ideas. Public commitments expressed in convention platforms, Republican newspapers, and the record of the party in Congress reveal an evolutionary development. The private papers and correspondence of numerous individuals who were associated with that development provide an abundance of additional material explaining the nature of what took place. The sources used are found chiefly in the Manuscripts Division and the newspaper files of the Library of Congress, the Historical Society of Pennsylvania, the New York Public Library, Rochester University Library, and the Illinois Historical Survey at the University of Illinois.

In a general way, Republicans represented the business, capitalistic civilization of the North, but the party was neither organized to serve economic purposes nor was it captured as a vehicle for any particular economic group. Economic elements, contained in the anti-Nebraska movement from the beginning, were submerged by common consent in the main effort to oppose slavery extension. For the first two or three years there was no discernible pattern beyond that single objective, no assurance of what direction later developments might take, practically no evidence of economic purpose or intent at all.

Later, individual Republicans on their own responsibility sought to identify the Republican cause with economic objectives. Henry C. Carey, Horace Greeley, and a few others proposed to organize the

economic forces of the nation into a vehicle for political action, especially when the Panic of 1857 provided favorable opportunities through an aroused interest in economic affairs. Most Republicans were at first reluctant to enlarge upon the party's original purpose, and businessmen were for the most part indifferent or unfriendly to the rise of this new party which they associated with the unsettling effects of the slavery issue.

As an increasing number of Republicans began to give their attention to economic policy in 1858 and 1859, differences of opinion appeared on almost every issue. A wide range of attitudes regarding tariff, railroad, banking, currency, and homestead legislation found expression in Congress and to a limited extent outside Congress. Predominant views soon became evident on a few subjects, notably homesteads and a Pacific railroad. Tariff policy involved considerable controversy, and questions of money and banking were not seriously raised until after the Civil War had begun.

By 1860 Republicanism had become identified with a program of action clearly more ambitious than simply opposing the further extension of slavery. As far as a general economic policy was concerned there were still more uncertainties and loose ideas than settled opinion. At the Chicago convention, homesteads, a Pacific railroad, internal improvements, and a revenue tariff with incidental protection were cautiously endorsed. No one actually knew what sort of an economic policy the Republicans would follow when they won the election of 1860. Nevertheless, a nucleus of economic leadership had evolved out of the composite nature of the party, the chief characteristic of which was that it combined the interests of practically every brand of Republicanism in the country into a workable organization. Most of this economic leadership came from the ranks of the former Whigs, but not all of it, and each issue dealt with was re-examined and restated to fit a new organization containing both Whig and non-Whig elements.

In the end, a remarkable unity of purpose was achieved, based on a concept of economic nationalism involving the use of the central government to provide aid to private enterprise wherever possible. A sweeping program of legislation was placed on the statute books almost as soon as the party gained control of Congress. Tariff policy, beginning with the supposedly free trade bill of 1857 and gradually reaching protectionist goals by 1864, was greatly influenced by Carey, Greeley, and Morrill. Local interests and political expediency were involved, but uppermost in the thinking of the leading tariff promoters was the idea of supporting American industry in order to strengthen the national economy.

Homestead legislation was urged as a program of agrarian reform, but more than that it was looked upon as a means of speeding up the settlement of the public domain, thereby expanding American agriculture and again contributing to the national economy. A Pacific railroad bill was adopted by Republican promoters after Democratic sponsorship had failed to overcome the difficulties of conflicting local interests. The necessity to use government aid for the

benefit of private enterprise was freely accepted in undertaking a project which had obvious national advantages. Land grant agricultural colleges and a department of agriculture in the federal government were also measures to advance the national interest through the welfare of a particular class.

The Legal Tender Act and the National Banking Act, both highly controversial issues within the Republican party as well as in the country at large, were adopted initially as war measures. However, the Banking Act at least was designed to fit a larger situation. The Legal Tender Act, too, represented an assumption of responsibility by the central government to provide a national currency, even though the Act was almost unanimously opposed by the party's chief policy makers. Legal tender was followed with a form of national currency more to the liking of the Republicans in the National Banking Act. This measure, clearly intended to aid business enterprise by providing a uniform circulating medium, was one of the great nationalizing measures of the Civil War period.

The underlying purpose of Republican economic policy was to promote national economic self-sufficiency. In its application the dominant principle was that the economic welfare of various groups of the people is a proper concern of the national government. This was the essence of Greeley's entire campaign for benefits to laborers, farmers, and manufacturers. The same principle lay at the heart of Carey's philosophical system, as it did also in the thinking and public statements of Sherman, Morrill, and other prominent Republicans. The result was to bring about a closer relationship between the government and private enterprise. The Republican party had come to power as a liberal, progressive organization opposing the conservative inertia of *laissez-faire* Democrats. It was built on the popular foundation of Jeffersonian democracy, intending at the same time to provide material benefits as well as law and order.

337 pages. \$4.21. MicA54-2020

**A STUDY OF THE ELIZABETHAN
SUCCESSION QUESTION, CIRCA 1558-1568
AND ESPECIALLY OF THE SUFFOLK CLAIM**

(Publication No. 8560)

Mortimer Levine, Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor Conyers Read

1558-1568 may be regarded as a distinct chapter in the history of the Elizabethan succession question. Concern about the succession was probably at its highest and the ultimate outcome was certainly in doubt. The life of an unmarried Elizabeth was all that seemed to stand in the way of anarchy. At first there was confusion over the several pretenders, but as the situation cleared up the issue tended to be between Mary Queen of Scots and Lady Catherine Grey.

The Catholic and Scottish Mary had the superior hereditary claim; the Protestant and English Catherine was next in line according to Henry VIII's will. Uncertainty over who had the better right in law made it easy for most men to base their choice on religion.

Events of 1561 and 1562 provoked matters considerably. In 1561 Catherine's clandestine marriage with the Earl of Hertford was discovered. Elizabeth suspected a plot and had the marriage voided by an ecclesiastical commission. A study of the evidence does not substantiate a conspiracy but does indicate a true marriage. The verdict bastardized Catherine's sons but did not prevent her backing from increasing. Also in 1561 the Scots began negotiations for the recognition of Mary's claim and a play (*Gorboduc*) with anti-Stuart and pro-Suffolk implications appeared. In 1562 England was frightened by Elizabeth's nearly fatal illness and a harebrained scheme to bring Mary to the throne.

When Parliament met in 1563 its members were determined to see the succession declared but unable to agree on a claimant. Elizabeth, who opposed any settlement, managed to frustrate Parliament through delaying tactics. After the session, however, things were provoked anew by the discovery of John Hales's activities. Hales wrote a tract supporting Catherine's claim and supplemented this with risky doings aimed at establishing her marriage. Again Elizabeth suspected a plot. The evidence implicates several prominent men, perhaps even Secretary Cecil and Lord Keeper Bacon, but hardly reveals a serious conspiracy. The chief result was to incite a battle of succession tracts.

Three main issues were involved. One was whether the common law rule against alien inheritance applied to the succession and to Mary. Here no conclusive answer was found for what was really an unprecedented question. Another was whether the Suffolk descent from Henry VII was legitimate. Supplementing the arguments of the tracts with other evidence, we may conclude that it was. The greatest issue was that of the authenticity of Henry VIII's will. Here the tract writers, unable to inspect the concealed original, argued to a stalemate over whether it was signed in writing as prescribed by two Statutes. An examination of the original reveals it to be signed in a writing which looks like the King's. The weight of circumstantial evidence stands against the possibility of forgery.

The succession question came to a head in Parliament in 1566-7. Parliament was probably ready to accept Catherine's claim. Its strategy was to withhold supplies until the succession was declared, but Elizabeth avoided a succession settlement through a judicious policy of appeasement on other matters. Nevertheless, soon after the session hopes for a Suffolk succession soared, 1567 being a bad year for the Stuart cause. Indeed, the Darnley murder seemed to all but eliminate Mary from the succession picture. However, 1568 proved to be a turning point. Catherine's death left no satisfactory Suffolk claimant and Mary's flight to England was followed by events which eventually led to her execution. After that a very different succession question arose with James VI's accession gradually becoming assured.

469 pages. \$5.87. MicA54-2021

THE ROYAL GENERAL FARMS IN
EIGHTEENTH-CENTURY FRANCE WITH
SPECIAL REFERENCE TO
THE PERIOD 1726 TO 1786

(Publication No. 8730)

George Tennyson Matthews, Ph. D.
Columbia University, 1954

The General Farms collected nearly all indirect taxes levied upon eighteenth-century France. These taxes included, in order of their fiscal importance, the aides (sales taxes), the gabelles (salt monopolies), the tabacs (tobacco monopoly), the domaines (registry taxes), and the traites (internal and external customs duties). In 1788 they provided the government with over one-half of its taxation revenue. To manage these diverse taxes a vast organization of physical, human and procedural parts and skills was required. Just prior to the Revolution, the General Farms was probably the most highly articulated, most bureaucratically disciplined agency in the government. With some 30,000 regular, commissioned personnel – of which 23,000 were uniformed, paramilitary Guards – and 5 to 6,000 casual agents, the General Farms was the largest segment of French civil administration.

In its relation to the royal fisc, the General Farms fulfilled three functions. It enforced the tax-laws, managed the monopolies, and served as a general police force for fiscal matters. It remitted funds to the treasury under an accounting system which was notable for its accuracy and dependability. It served as a disbursement sub-treasury for the discharge of government expenditures. This last function was symptomatic of the decentralized character of the fiscal service. It was also, in part, responsible for the practice of tax-farming the General Farms to the quasi-private Company of General Farmers.

Tax-farming was a system whereby the government leased, to a private financier, the right to collect taxes in its name in return for a guaranteed income in installments, under terms of a rental contract, or lease. The tax-farmer bore the costs of collection, but profitted from the difference between the amount collected and the sums remitted. In the eighteenth century the tax-farmer was the Company of General Farmers, a multiple partnership of forty to sixty financiers, each of whom contributed equally to the capital of the enterprise, a matter of some 1,560,000 livres per partner in 1786. Between 1726, when the General Farms was reestablished after the failure of John Law's schemes, and 1791, when the system was discontinued, the Company controlled the General Farms through an unbroken succession of twelve six-year leases. In renting the General Farms, the Company assumed two responsibilities. It financed and directed the tax-collecting bureaucracy, an administrative duty which the Company performed with considerable skill. It served as a collective financier, supplying the treasury with short and long-term credits. Often the amount of government expenditures which the General Farms dis-

bursed exceeded the installment which the Company was to remit to the treasury within a given period. The Company honored this government overdraft, deducting the amount from future installments. In effect the Company sustained the treasury on credit, obtaining the needed funds by selling short-term billets des fermes, counterparts of modern treasury-notes. Beginning in the mid-eighteenth century, the government, in addition, called upon the Company for heavy long-term, permanent loans. In 1750 the latter credits totaled 20,000,000 livres; by 1774 the figure had risen to 92,000,000 livres. On this loan the Company annually received, in interest and in tax-farming profits, twenty percent return. This was the price the monarchy paid for the financial services of the tax-farmers. Since the financial condition of the government was so weak that repayment of this debt was literally impossible, the Company came to hold a perpetual mortgage upon the indirect taxation of the kingdom. In this way it became impossible for the late Bourbon monarchy, even under such reform ministers as Turgot and Necker, ever to be rid of the antiquated, costly, widely detested system of tax-farming. 442 pages. \$5.53. MicA54-2022

AGAINST ALL IDOLS: ALEXANDER HERZEN
AND THE REVOLUTIONS OF 1848. A CHAPTER
IN THE HISTORY OF TRAGIC LIBERALISM

(Publication No. 8724)

Allen McConnell, Ph. D.
Columbia University, 1954

Conventional historiography has set Alexander Herzen (1812-1870) down as a "romantic," a characterization proclaimed by hostile critics, conceded by partisans, accepted uncritically by detached observers and defined by none. One gathers from the context when the term means that Herzen was quixotic, sentimental, egotistical, slightly ridiculous, an aesthete pure and simple, posturing and insincere, naively materialistic or naively idealistic, a lover of destruction for its own sake, etc.

Herzen was none of these things. Herzen studies have suffered from the imprecision and condescension that have marked much of the historiography of Romanticism and the biographies of Romantics. If we mean by "romantic" a person who accepts the variety of human experience, the contradictions and complexity of human nature, then Herzen was indeed a romantic.

Conventional presentations of his romanticism have underestimated his significance as a moralist, a philosopher of history, an analyst of political institutions and a self-conscious link between Europe and Russia. Herzen was second only to Tolstoi among the moralists of nineteenth century Russia. Better than any revolutionary and many religious thinkers, Herzen understood men's need for idols, authority, dogma and ritual – and their fear of freedom. Yet he also knew that without freedom Man

remains stunted and degraded. Furthermore, Herzen realized that theories which presupposed an immanent logic in history were false, even although he himself passionately wished from history a guarantee for the success of revolution. In an age of rival deterministic philosophies of history, he stood almost alone in proclaiming the openness and prodigality of history, which never moved in a straight line but "knocked on a thousand doors."

The underestimation of Herzen's realistic view of human nature and history has resulted in exaggerations of his expectations before reaching Europe and of his negativism after the "June Days" in France in 1848. Hence the present study is offered as a contribution toward the biography of Herzen in the crucial period between his departure from Russia in January, 1847 and his irrevocable commitment in March, 1849 not to return to the Russia he loved. He resolved to remain in the Europe that he feared was dying, a Europe powerless to think clearly but which nevertheless was the arena in which the battle for human liberty and dignity could still be fought.

During this turbulent period of indecision, Herzen gradually worked out the double function which characterized the remaining two decades of his life – interpreter of Europe to Russians and of Russia to Europeans. Despite personal anguish to come – far deeper than he had felt after the failure of the revolution of 1848 – he continued his brilliant work as man of letters and publicist in support of his basic conviction that only by mutual aid could Russia and Europe become free. Neither could be free while the other was enslaved. His frequent and oft-cited rhetorical questions on Europe's decay and philistinism have obscured this basic fact.

Similarly, his more despondent utterances have enabled writers to term Herzen a "lyricist of destruction" who wished to destroy all that exists "simply because it exists," an anarchist comparable to Bakunin. Yet Herzen put his chief reliance not on violent direct action, but on clear thinking, education, emancipation from idols, whether religious or revolutionary. He never dreamed of the abolition of government. While he criticized universal suffrage for the "orang-utangs" – the gullible and uneducated masses – his remedy was not the abolition of government or elites but vastly increased popular participation in government at all levels – county, communal, cantonal, departmental as well as national – to give people experience in government and remove their awe of it.

295 pages. \$3.69. MicA54-2023

RIP VAN WINKLE: POLITICAL EVOLUTION IN NORTH CAROLINA, 1815-1835

(Publication No. 8566)

Daniel Miles McFarland, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Roy F. Nichols

Between the decline of the Republican and Federalist parties and the rise of the Democratic and Whig parties there were no organized political divisions in North Carolina. For two decades the state underwent political reorganization without parallel in its history. These were unhappy years. The state was economically depressed, its banking system was near collapse, its transportation facilities were hopelessly inadequate, and its constitution needed reform. There was no state educational system and little opportunity to advance in any field of endeavor within North Carolina during this period. Each year witnessed the loss of thousands of promising youth to the West. Yet in spite of these and other problems the General Assembly was afraid to face issues. True, a few farsighted men spoke out for internal improvements, banking and government reform or free education, but the controlling groups in the government were too conservative, too afraid of taxes, to resort to action. Session after session of the Legislature met and adjourned without solving problems. Little wonder that there were those who called North Carolina the "Rip Van Winkle" state.

The state Constitution of 1776 gave an undue weight to the conservative Eastern Roanoke section of North Carolina. This section feared any form of governmental action either at state or national levels. Thus reformers came in time to believe that reform of the Constitution and a lessening of the power of the Roanoke section were essential to their ultimate objectives. After years of agitation a constitutional convention met in 1835, but no radical changes were made. Changes came largely due to other factors.

North Carolina stood in a different relationship to the Union at the end of Jackson's administration from that which she held under Washington. In 1790 both New York and North Carolina had the same number of representatives in the federal Congress. By 1830 New York had forty and North Carolina only thirteen. As the state's relative importance in the Union declined and economic depression increased there were in some quarters growing evidences of frustration and anti-nationalism which found expression in opposition to Jackson. The growth of the movement for tariff protection and abolition of slavery intensified these trends. Since Jackson's strongest support came from the Roanoke section, the growing opposition to Jackson was a factor in destroying the power of the Roanoke leaders.

The real change came only after the revolt from the political control of the Roanoke East. For years the followers of Jefferson and then of Jackson had blocked a strong banking system, public works, education, and a reformed constitution. The followers of John Quincy Adams and Henry Clay were not enough

to destroy the Jackson party, but after 1832 they were joined by the State Righters. Strange bed fellows, these nationalists and sectionalists, but together they formed the Whig party and broke the might of the agrarian conservatives.

For twenty years the doctrines of agrarianism had blocked progress and supported the status quo. Constitutional reform alone could not break the spell of a do-nothing attitude. Political reorganization and the movement of time coupled with movement of populations did what movements for reform had failed to do. Old sleeping Rip Van Winkle could sleep for a time but not forever.

504 pages. \$6.30. MicA54-2024

**GEORGE ROSE AND WILLIAM EDEN:
A STUDY IN THE RELATION OF PARTY
MANAGEMENT TO NATIONAL ECONOMICS**

(Publication No. 8726)

Julian Raymer McQuiston, Ph. D.
Columbia University, 1954

Obeing his monarch's request, in December 1783 the younger Pitt formed a ministry which continued in office until 1801. The success of this ministry during the peaceful years following the American war was largely the work of two political servants, George Rose and William Eden. Though other men performed useful services in the Pitt administration, Rose and Eden contributed what was permanently significant in Pitt's early program.

During the first years of his ministry, Pitt had to consider two kinds of reform – constitutional and economic. Late in 1785 he ceased to advocate constitutional reform after having received disheartening support for such an innovation from Parliament and little encouragement from George III.

Meanwhile with the capable assistance of Rose, Pitt was constructing an effective party by the use of government patronage, particularly that of the revenue departments. As Secretary of the Treasury, Rose managed the ministerial party, and gradually secured control over the distribution of public offices for political purposes. The party which Rose organized and over which he presided represented a concept that had been perfected by George III. But when the King found a talented minister who had the nation's confidence and who pledged himself to respect the royal prerogative, he allowed the actual direction of the ministerial party to become the responsibility of the Treasury.

Such a party, however, meant that Pitt could not press any reform of the electorate without alienating his support in Parliament and losing the confidence of the King. But such a party did provide him with the majority necessary to facilitate his economic program. Moreover, the abandonment of parliamentary reform favored the political interests of the landed class, which had a virtual monopoly of the party system.

Pitt's economic program, on the other hand, mainly favored the rising middle class. Though Pitt's policy did not satisfy the political aspirations of the manufacturers, it did satisfy their economic needs. The commercial treaty with France in 1787, negotiated by William Eden, gave the middle class what it really wanted – markets. The patient and skilful diplomacy of Eden, coupled with the simplification of the tariff schedule by Rose, made a major breach in the mercantile system.

Unfortunately, the close collaboration between the Treasury and Eden could not be again repeated, though Eden attempted to negotiate treaties of commerce with Spain and Holland. In those countries, distrust of Britain's industrial predominance induced their governments to believe that as long as Britain prospered their countries would thrive from the export of raw materials from their colonies to British manufacturers, but that when markets for British products declined, then the economies of Spain and Holland would likewise suffer.

As long as Rose and Eden performed their complementary duties in the cause of freer trade, then only the indifference of foreign ministers could prevent the success of liberal economics. But when Dundas took Rose's place, commercial liberalism was defeated at home and abroad. In 1790 Eden became aware that the Pitt ministry had abandoned its reliance upon the peaceful exchange of goods in favor of an aggressive program of acquiring colonial markets. Although commercial liberalism no longer to be the leading feature of Pitt's program, it had already established a powerful precedent for the political party which was to claim Pitt as its founder. Rose as manager of a party which eschewed constitutional reform and Eden as an advocate of freer trade therefore exerted significant influence in launching a party tradition.

271 pages. \$3.39. MicA54-2025

**OLD ARLINGTON: THE STORY OF THE
LEE MANSION NATIONAL MEMORIAL**

(Publication No. 8744)

Murray Homer Nelligan, Ph. D.
Columbia University, 1954

For almost a century and a half, Arlington House – now the Lee Mansion National Memorial – has dominated the scene across the river from the National Capital. Designed by George Hadfield and built between 1803 and 1817 by George Washington Parke Custis, the adopted son of General Washington, the structure is an outstanding example of a Greek Revival building of the early 19th Century.

From his guardian, Washington Custis acquired a lifelong interest in scientific agriculture. To further its advancement, he held an annual fair at Arlington from 1805 to 1813, and the event proved so popular, it is considered to be one of the primary sources of the great program of agricultural improvement in effect today.

Custis also did much to perpetuate the memory of his distinguished foster-father. His collection of Washington relics attracted hundreds of visitors to Arlington, and his reminiscences of his early years at Mount Vernon, which he published in newspapers throughout the country, did much to keep alive the memory of Washington. He also wrote a number of dramas on national themes between 1827 and 1836 which were an important contribution to the development of a distinctive American drama. An accomplished orator, Custis always advocated the principles of freedom for which Washington and his associates had fought.

Robert E. Lee, a distant relative, was a favorite with the Custises from his earliest years, and the development of his character was greatly influenced by them, and Arlington itself, both before and after his marriage, in 1831, to Mary Custis. Mary's father was the nearest living link to the First President, and associating with him and living in the presence of so many of the General's belongings – as he did for many years – made Washington a very real example to the young engineer officer. From Mrs. Custis, Lee acquired many of the religious convictions which constituted such an important part of his character.

Lee's associations with Arlington, and with his own section, became even closer after his father-in-law died in 1857. As the executor of the latter's estate, Lee undertook the management of Arlington and the other Custis properties, an experience which gave him a sympathetic understanding of the problems confronting his kinsmen and fellow-planters and confirmed his belief that his first loyalty was to his native state. Hence, when the sectional issue came to a head in 1861, Lee could only decide that his duty lay with Virginia.

As Lee's fame grew during and after the Civil War, so did that of his former home. For many years after the establishment of a great national cemetery on the estate, in 1864, the house was used for a cemetery headquarters. Then, in 1925, Congress authorized its restoration as a national memorial, largely because of Lee's influence in bringing about the restoration of the Union after the war, not by force, but by the far stronger bonds of a common loyalty.

Few historic houses appeal more to the emotions than does the Lee Mansion, as it is now generally termed. Impressive and somewhat lonely among the trees and monuments which almost surround it, the old dwelling has an indefinable air of grace and gentility reminiscent of earlier, happier days. In building it, George Washington Parke Custis seems almost to have anticipated its present use; for its architectural character – dignity and strength, combined with simplicity and steady grace – perfectly expresses that of the great man, General Robert E. Lee, in whose honor it is now maintained by the nation. To all who see it, now and in the years to come, the mansion will be a tangible reminder of his nobility and greatness.

532 pages. \$6.65. MicA54-2026

THE HEYDAY OF THE POPULAR STORY WEEKLY

(Publication No. 8746)

Mary Noel, Ph. D.
Columbia University, 1952

In the period stretching roughly between 1835 and 1885 a conspicuous, if not a dominant, feature of American popular literature was the story weekly. These weeklies appeared in newspaper format and sold at a very low price. They emphasized light, sensational fiction and reached a public that generally had neither the taste nor the money for books. From 1855 on they were sold almost entirely through the newsstands – in fact, they greatly stimulated the development of these stands. Their circulations far exceeded most of the magazines that were sold largely through mail subscriptions. Robert Bonner's New York Ledger, the most prominent of all the "story-papers," reached a circulation of 400,000 in 1859. No other magazine or paper in America even approached this figure at that time.

Bonner attributed his success partly to the fact that he advertised to an extent unheard of in his day, filling whole pages of the daily newspapers with abruptly-ending serial installments and striking iteration copy. He also engaged America's most popular authors – Mrs. E. D. E. N. Southworth, Sylvanus Cobb, Fanny Fern – and paid them at rates which were so high as to receive extensive publicity. Under the story-paper regime the writer of light popular fiction for the first time in America found a regular assured market for his product.

As a result of the Ledger's success, many imitators entered the field, and the competition among them for such authors as Ned Buntline, Horatio Alger, Mary Jane Holmes, Laura Jean Libbey, and "Old Sleuth," became not only keen but acrimonious. Street & Smith's New York Weekly, Saturday Night, the Fireside Companion, and the Family Story Paper each achieved a circulation exceeding 200,000 at some time in the seventies or early eighties.

Since the story-papers had no objective except to please their vast public, they form an excellent index to the popular taste of the period. Their native plots with heavy dependence on purely fortuitous elements and sensational denouements, their simple opposition of absolute villains to equally absolute heroes and heroines, reveal a public that was even more unsophisticated in its taste than the readers of today's "pulp."

Although the stories are too preposterous to represent actual conditions of life, they do reflect the ideals of their time. The Christian standard, not only in the realm of sexual morality, but in that of social ethics, is all-pervasive. The story-papers are vigorous in their propaganda against heavy drinking and gambling, and even against smoking and swearing. They assume a somewhat evasive attitude on the position of women. They generally hold that a woman has a right to an intellectual life of her own, and some of the papers grant that, if she must work outside the home, a large number of careers should

be open to her. All of the story-papers showed sympathy for the poor-but-noble-working-girl, and upheld the dignity of the working man. Some of them went further and published stories with Knights of Labor as heroes, as well as editorials urging the unionization of labor and the reduction of working hours.

The story-papers did much to build up the present-day market for light, newsstand fiction. Whether this was for better or for worse is a question on which both nineteenth-century and twentieth-century critics have differed among themselves. But there are at least some who have held that the reading even of sensational fiction for "escape" purposes provides a relatively harmless form of relaxation.

671 pages. \$8.39. MicA54-2027

**WALTER VROOMAN:
RESTLESS CHILD OF PROGRESS**

(Publication No. 8756)

Harlan Buddington Phillips, Ph. D.
Columbia University, 1954

Walter Vrooman, an agitator, was born in 1869 and raised in the Midwest. His life – all too short though he lived a full forty years – paralleled the rude emergence of business as a dominant social force following the Civil War. The new industrialism declared its independence of the bonds of the past. Critical tongues turned upon the peculiar manners and structure of their times and articulated a record of their age. With utter unconcern the juggernaut of business expansion, speculation, and profiteering rolled over the broken bodies of common men and the souls of sensitive ones while a band played a march titled "Rugged Individualism."

Laissez faire was the order of the day but outraged spirits at the grass roots of society urged a return to the use of governmental power to check the captains of industry. The Populists appeared on the boards and, until swallowed by the two major parties, hurled their gauntlets at the money power. Single taxers urged their panacea. Muckrakers laid visible many social cancers so that even the callous might see. Socially conscious lawyers struck at the "fellow servant doctrine" through attempted legislation and court decisions, but the courts continued to chant their specious "freedom of contract" doctrine and by so doing covered the sins of the new industrialism with a cast of legality. Settlement houses sprang up in the midst of the unfortunate. The Social Gospel had its day. Searing indignation, true to the finer traditions of our history, continually pointed to the disparity between practice and profession.

Walter Vrooman was part of this restless turbulence and revolt was in the very air he breathed. Keenly aware of and almost overly sensitive to the human quality, he noted the divergencies of wealth, the grim fact of poverty, the soullessness of the factory system, and the serf-like status of labor,

fastened on society almost as an afterthought by those who regarded earning a living more highly than living a life. Vrooman's allegiance was always to the latter and when he found himself – as he did in the streets of Chicago in 1885 – confronted on every hand by social injustice he was by his very nature compelled to take issue with industrial wretchedness, to extirpate it to the limit of his talent, and to point to the warmth and the rich potential of a society ordered on the basis of brotherly love.

Walter Vrooman was also an odd character whose distinguishing significance was the ardor and pungency of his personality. Vrooman was never a truth-seeker, always a truth-teller. Passion was his substitute for mind, never its driving force. In his view evil men stood behind industrial evils, and he sought to rout these forces of darkness by the sheer power of his moral fervor. Spurred by the purity of his own vision he falsely assumed that his conclusions, fashioned from his limited experience and preparation, were eternal truth. Interestingly enough, he never wanted colleagues, but followers. He was born commander. He never learned that progress is not necessarily a function of mere heat, but of a slow, and often painfully slow, period of education.

And yet, with all their limitations, indignation and scorching rhetoric play their role in the stream of history. Steadier hearts, with no less passion but with greater discipline, ferret out the facts with which to win public support, to convert the visions of these human torches into realizable aims, and to compel ignorance, at long last, begrudgingly to give way before enlightenment. Vrooman moved on many fronts and did what he could to jolt complacent minds into concern for children, life in the tenements, labor organization and education, good government, and economic security. He was a human torch, a "restless child of progress; even a child of restless progress," and of that strange, often elusive, panoramic story called America.

309 pages. \$3.86. MicA54-2028

**THE TRANSFORMATION OF THE
BOARD OF TRADE, 1830-1855**

(Publication No. 8762)

Roger Warren Prouty, Ph. D.
Columbia University, 1954

The English Board of Trade was transformed between 1830 and 1855. While it had formerly functioned as an advisory committee of the Privy Council for the consideration of all matters relating to trade and foreign plantations, it then became an administrative department of state responsible for new business. It had already surrendered to the Colonial Office almost all its duties in regard to foreign plantations or colonies; and in successfully freeing trade from all mercantilist controls and leaving a tariff structure designed only for revenue, it deferred virtually all its other duties in regard to trade to the

Treasury. But the loss of its traditional duties did not destroy the committee of the Privy Council for it acquired various new responsibilities and by 1855 it was recognized as the department of state which administered certain aspects of industry. It had developed a trained secretariat and complex organization to handle the new business, and the importance of its chief, the President, was no longer determined by his personality but by his office. He automatically became an important member of all cabinets. This study undertakes to define the new responsibilities, how they were acquired, and how the Board was reorganized in order to handle them.

The new duties of the Board were various. After 1832 it was responsible for the collection and publication annually of statistical information. It was given the superintendence of the government schools of design and administered the office for the registration of industrial design. It helped recodify the laws regulating company organization and was given the administration of the office for the registration of joint stock companies. It was given various responsibilities for the supervision of railways, their construction and their operation.

But the Board's most important duties were in respect to the merchant shipping industry. It acquired responsibilities for the navigation of ships, for pilotage, lighthouses, the rules of the road and for meteorology. It became more or less responsible for the construction of ships, the measurement of their tonnage, their registry, seaworthiness, and the stowage of their cargoes. The qualifications of ships' officers and the treatment of their crews also became the concern of the Board. Furthermore it became responsible for the welfare of seamen, emigrants, coal-whippers and those shipwrecked at sea. All these activities were given to the Board during the first half of the century and by 1850 the confusion of responsibility between it and the other departments of the government, together with the uncertainty as to the meaning of much of the maritime code, forced a reorganization of the whole code in the 'fifties. It was the great Merchant Shipping Act of 1854 which not only codified all merchant shipping legislation but recognized the new Board of Trade as an administrative department of state.

Thus by 1855 the Board had been transformed. While it was responsible for publishing statistics and supervising railways and carrying out other tasks, it was its extensive and well defined powers for the general regulation of merchant shipping which really determined its new status.

273 pages. \$3.41. MicA54-2029

AMERICAN RED CROSS DISASTER SERVICES, 1930-1947

(Publication No. 8767)

Thomas Hedley Reynolds, Ph. D.
Columbia University, 1954

This monograph deals with the history of the Red Cross Disaster Services from 1930 to 1947. It is unified by the theme of increasing governmental welfare activity and its impact on private charity, as demonstrated by the disaster service activities of the Red Cross. The material covered falls into three categories. The first part, chapters I through V, deals with the great depression and the role which the Red Cross played in alleviating distress under the Hoover administration. The second part, chapter VI through XIV deals with the great disasters of the mid-thirties, and the changing role of the Red Cross in dealing with natural disasters due to the increase of governmental welfare activities during the New Deal. The final part, chapters XV through XVII, covers the war and early post-war period from 1941 to 1947 emphasizing again the changing role of the Red Cross due, in this period, to increased governmental activity in the field of disaster relief because of the exigencies of total war or the threat of total war.

Throughout this monograph the author was faced with the problem of how to write a fairly complete story of Red Cross disaster service without resorting to the endless procedure of describing the details of one disaster after another. This problem has been partially solved by telling the story in detail of only those disasters which might serve to indicate basic Red Cross policy and technique and the changes in these which occurred during the period covered. The activities and trends between these detailed presentations are covered by brief summaries making maximum use of such statistics as were available.

In the section of this work dealing with the depression during the Hoover administration the discovery is made that the Red Cross, a private charitable organization dominated by individuals who were not sympathetic to the principles and practices of unemployment relief on a national scale, found itself driven by sheer necessity to act as a national organization dispensing this kind of relief. It is probable that the professional career personnel within the organization were more responsible for this change than the voluntary chapter members not all of whom supported these new activities.

Though the allegation has been made, with some superficial justification, that the Red Cross was being used by the Hoover administration and its adherents within the Red Cross as a cushion to soften the hard fact that the depression was a desperate one here the evidence seems to indicate that the organization began to enter the field of unemployment and related types of relief simply because the situation was so desperate that no society claiming as its reason for being the relief of victims of disaster could survive the stigma of having done nothing during this period. The fact remains that the Red Cross

did take an active part in the relief of unemployment on a national scale adding evidence to support the thesis that American thought concerning charity and unemployment was undergoing a change in this period.

The series of chapters dealing with the great disasters of the thirties concerns itself primarily with Red Cross activities in connection with the great spring floods of 1936 and with the Ohio-Mississippi flood of 1937. Considerable attention is given to Red Cross organization, both of its professional and volunteer workers, to the types of activities which make up Red Cross relief, and to an evaluation of the effectiveness of this relief. Throughout this section the principal changes in Red Cross practices were caused by the entrance into the disaster relief field of many new government agencies, originally created to alleviate distress arising from the depression. The activities of these agencies in connection with disaster relief and their relations with the Red Cross are outlined and the attempt is made both to estimate the extent of their activities and to evaluate the impact of them on the Red Cross.

The final section of this work deals with Red Cross disaster relief activities during and after World War II and particularly with the attempts on the part of the Red Cross to solve serious problems of conflicting jurisdiction with the various civil defense organizations. It is found that these problems were not wholly solved, partly because of a tendency on the part of Red Cross personnel to pretend they did not exist. The resulting ambiguous position of the Red Cross in a field of activity now partly covered by a wide variety of government agencies is demonstrated in a detailed analysis of relief activities after the Texas City explosion in 1947.

At the end of the work the author has taken the liberty of attaching an epilogue in which, drawing on conclusions reached in this study, he attempts to analyze some of the problems facing the Red Cross in the field of disaster relief and some of the solutions which might logically be available.

404 pages. \$5.05. MicA54-2030

THE ZEALOUS PATRIOT: A LIFE OF JOSEPH REED, 1741-1785

(Publication No. 8769)

John Francis Roche, Ph. D.
Columbia University, 1954

The career of Joseph Reed embraced services as soldier, legislator, administrator, and publicist in the American Revolution. A graduate of the College of New Jersey, he studied law under Richard Stockton and at London's Middle Temple. In England Reed became engaged to Esther DeBerdt, whose father, Dennys, became agent for the Massachusetts House of Representatives. Reed returned to New Jersey in 1765 and by 1770 had developed a lucrative law practice and obtained his first governmental experience as Deputy Secretary of the province.

In 1770, Reed married Miss DeBerdt and moved to Philadelphia. There he emerged as a patriot leader at the time of the Tea Act controversy. Desirous of maintaining the link with the Mother Country, though firmly opposed to Parliamentary taxation, Reed attempted to secure a softening of the ministerial policy by explaining the American position in letters to Lord Dartmouth, Secretary of State for the colonies.

When hostilities began, Reed accompanied Washington to Cambridge where he performed invaluable service as the General's secretary and confidant during the summer and fall of 1775. In 1776 Reed was with Washington again, this time as Adjutant General of the Continental Army. The military disasters at New York temporarily shook Reed's confidence in Washington, a lapse which provided ammunition for groundless charges made later in Reed's life that he then contemplated deserting to the British. Quite to the contrary were his actions, for he vigorously pressed Washington for a blow at the British posts along the Delaware, reconnoitered to secure valuable information for the stroke, and participated in the Battle of Princeton.

In March, 1777, Reed was offered the post of Chief Justice of Pennsylvania but he declined. The tardiness of Congress in appointing him a general officer turned Reed from the military life, however. He participated in the 1777 campaign as a volunteer aide to Washington, narrowly escaping capture or death in the Battle of Red Bank in December.

That same month the Pennsylvania Assembly elected Reed to Congress. He was appointed to the committee on army affairs which sat at Valley Forge throughout the winter of 1777-1778. In June 1778, he was one of several Congressmen approached by the British peace commission led by Lord Carlisle. Reed revealed the attempt of one commissioner, George Johnstone, to obtain his aid for a bribe of £10,000.

In October, 1778, Reed resigned from Congress and was elected to the Supreme Executive Council of Pennsylvania. In December he was raised to the presidency of the Council, an office - the state's highest executive post - to which he was reelected in 1779 and 1780. Confronted by a bitter partisan cleavage between supporters and opponents of the state's democratic constitution, Reed gave Pennsylvania leadership which was patriotic, as vigorous as the limited powers of his office would permit, and marked by an effort toward moderating the doctrinaire and sometimes irresponsible programs of the Constitutionists. The abolition of slavery, the creation of the University of Pennsylvania, the prosecution of General Benedict Arnold, and the liquidation of the mutiny of the Pennsylvania Line were highlights of Reed's administrations. His term of office ended in 1781 almost simultaneously with the victory at Yorktown.

Reed's valuable contributions to the American Revolution were obscured by a bitter attack launched against him in 1782 by John Cadwalader as part of the Anti-Constitutionalist political strategy toward gaining control of the Council. Washington and Nathanael Greene defended Reed against the main charge against

him: treasonable intentions in December, 1776. As a measure of vindication Reed was again elected to Congress, but illness prevented him from taking his seat. He died in March, 1785.

446 pages. \$5.58. MicA54-2031

EVOLUTION OF MEXICAN THOUGHT ON CHURCH-STATE RELATIONS, 1876-1911

(Publication No. 8579)

Karl Michael Schmitt, Ph. D.
University of Pennsylvania, 1954

Supervisor: Arthur P. Whitaker

The basic conflict in Mexico in the last half of the nineteenth century was ideological. On the one hand was the Catholic Church with her definite theories on politics, economics, and sociology, and opposed to her were the Liberal government and other political, religious, and philosophical groups.

To 1855 the Catholic Church retained its privileged position in Mexican society. With the success of the Reforma, however, during the late 1850's and the 1860's, the Liberals enacted anticlerical legislation and decreed separation of Church and State which in point of fact subordinated the Church to the State. The threat of strife, nonetheless, hung over the country until 1876 when a new strong man appeared in the person of General Porfirio Díaz. This caudillo not only restored order to Mexican society but also kept the peace and brought at least a superficial prosperity and cultural advancement to the country for thirty five years. In the field of Church-State relations he broadened the conciliation policy begun under Juárez but interrupted under Lerdo in 1873 and 1874. Conciliation became apparent not only in federal territories but also in many local areas. There was little consistency, however, since Díaz did not demand, nor did he himself follow, a rigid plan of action. Despite continuing points of conflict, the Church and the State settled many problems amicably. The position of Catholics eased considerably, and the Church experienced a partial revival.

In the meantime a younger generation, approaching maturity, rejected much of the old Liberal creed in favor of the new philosophy of Positivism which stressed order and progress through a scientific evolutionary method. The Positivists insisted that the only matters about which man should concern himself were scientifically demonstrable facts. Man should ignore all "metaphysical" speculations. The Positivists fought to control the public educational system, confident that in the long run they would be able to win the majority of Mexicans to their views. Believing as they did that the Catholic Church was an anachronism, they were not too disturbed by violations of the Reform Laws, and went along, by and large, with Díaz' conciliation policy, secure in their faith that the future was theirs.

The Liberals were divided. Many of them, upon acquiring wealth, moved into aristocratic circles and became apathetic toward the enforcement of the anticlerical legislation. Others, particularly the active Masons, remained strongly anticlerical and called for complete enforcement. Some even joined such radical groups as the new Liberal Party of the Magón brothers. Others of Liberal persuasion had become more moderate by the twentieth century. Francisco Madero and some of his closest followers were willing to enact certain features of the Díaz conciliation policy into law.

Catholics, too, were divided. Some still longed for the old pre-Reforma days and had learned little in all the years since 1855. The more active group among the Catholics, and those who apparently were the leaders of the Church viewpoint, adopted a more realistic attitude by the end of the era. This change was shown not only by the Catholic Party platform in 1911, but also by the Catholic social reform program discussed between 1900 and 1910. These men were willing to concede that the clock could not be turned back fifty years. As a result, they were determined to work through the new system and to accept the changed status of the Church in which the Catholic faith no longer occupied a privileged position in society. Seemingly in 1910 every major group, except for a few extremists, was willing to compromise its views on Church-State relations.

383 pages. \$4.79. MicA54-2032

AN ECONOMIC SURVEY OF SOVIET CENTRAL ASIA, 1920-1950

(Publication No. 8487)

Walter C. Schuiling, Ph. D.
University of Minnesota, 1954

In recent years the U.S.S.R. has drawn increasing economic support from the five republics which constitute Soviet Central Asia - Kazakhstan, Kirghizia, Uzbekistan, Turkmenistan, and Tajikistan.

The Central Asiatic Republics have developed into a region of great agricultural consequence - a source of both food and essential industrial crops for the entire Soviet Union. In addition to being the principal source of cotton for the U.S.S.R., Soviet Central Asia is an important producer of livestock, silk, cereal grains, sugar beets, fruits, and fiber crops. The increase in agricultural output during recent years can be attributed to (1) a greater area under cultivation made possible by collectivization mechanization and an expanded irrigation program, and (2) a greater yield resulting from practicing such principles of scientific agriculture as soil fertilization, crop rotation, and seed selection.

To provide the land necessary for an expanded agricultural program, new irrigation projects were necessary. The Soviets have enlarged the program begun under the tsarist government to include extensive irrigation works in the Golodnaya Steepe, the

Fergana Valley, the Chu-Ili-Balkhash region, and along the Amu Darya.

The five republics of Central Asia are proving to be a mineral treasure house upon which the Soviet economy is growing more and more dependent. The U.S.S.R.'s third greatest coal region has been developed at Karaganda; extensive petroleum deposits have been explored in the Emba fields; Balkhash and Dzhezkazgan furnish the largest share of Soviet copper production; more than four-fifths of the lead of the Soviet Union is mined and refined in Kazakhstan; many lesser metals have been discovered, and their deposits exploited.

To utilize the agricultural and mineral wealth of Central Asia, numerous industrial plants have been built during Soviet times. Several important textile mills have been constructed, metallurgical combines have been organized, machine factories have been built, and food processing plants have been established. Although the First and Second Five-Year Plans were periods of great activity, the Second World War witnessed a further rapid expansion as industrial plants were moved to Central Asia from the areas in the west threatened by the Germans.

The development of railroads, highways, and airlines was given a high priority in Central Asia, because transportation was the key to industrial growth, mineral exploitation, and distribution of goods. The construction of railroads, such as the Turkestan-Siberian, the Trans-Kazakhstan, the South Siberian, and numerous shorter lines, helped immeasurably to integrate the economy of one section of Central Asia with that of another and with the entire Soviet Union. The development of airlines has been particularly desirable in opening isolated areas.

Significant social and cultural changes have resulted from the growth and redistribution of population. New cities have come into being, and old ones have grown beyond recognition. Illiteracy has been greatly reduced, the general health of the people has been improved, and living standards have been raised. These improvements have had a considerable influence upon the political thinking of the Asiatic neighbors of the U.S.S.R.

The events of the past three decades suggest that Soviet Central Asia is well on its way to becoming a region of great economic importance, capable of standing as a hard core of defense in the event of an invasion of the U.S.S.R.

338 pages. \$4.23. MicA54-2033

MANUFACTURING IN NORRISTOWN, PENNSYLVANIA, IN THE TWENTIETH CENTURY

(Publication No. 8583)

James H. Soltow, Ph. D.
University of Pennsylvania, 1954

Supervisor: T. C. Cochran

Total employment in the diversified industries of the Norristown, Pennsylvania, area advanced from an estimated 4,500 in 1899 to almost 17,000 in

1951. Major periods of growth were recorded in the first decade of the century, during and immediately after World War I, and from the mid-1930's to the end of World War II. Over the half century, textiles, which were predominant in 1900, declined, and iron and steel, metal fabricating, stone and clay, plastics, and rubber industries have expanded.

Data obtained on the origins of a group of manufacturing companies in the Norristown area indicated that about one-half of the enterprises were founded in the area, one-quarter represented the migration of companies into the area, and one-quarter consisted of branch plants established by out-of-town companies. The largest category of locally-founded companies comprised enterprises begun by men with previous executive experience in Norristown companies in the same type of industry. Need for a larger plant and availability of a suitable building in the area were the reasons most often cited for migration of companies. The factor most frequently cited for location of branch plants was to gain access to local or regional markets.

The average size of manufacturing establishments increased over the period as a result of the growth of the larger companies in the area. The corporation has been the significant type of business organization in the area's manufacturing since 1900, but owner-management has been characteristic of locally-owned companies.

The most rapid mechanization of industry in the area occurred from 1914-1919 and 1947-1950, according to data on total primary horsepower. While some of the older crafts have been displaced by the use of automatic equipment, technical skills have been required to an increasing degree to operate complex machinery and processes.

The most important change in the composition of the labor force has been the increased percentage of salaried workers in relation to total number of employees. Average annual real wages per wage-earner in the area have more than doubled since the beginning of the century. Gains in average annual real value of products per industrial wage-earner were made in each decade from 1899-1950.

Data obtained on type and degree of competition indicated that emphasis on price competition was more prevalent in consumer goods markets than in business goods markets and in regional and national markets than in local markets. The Norristown area was regarded by most manufacturers in the area as satisfactory for distribution in eastern seaboard markets, but some concern was expressed about the future possibilities of competition in rapidly growing western markets.

Most of the manufacturing companies in the area have not developed to any extent positive efforts for good public relations, with the exception of a few of the larger companies. The Manufacturers Association of Montgomery County has assumed a place of importance as a service organization in the business community.

344 pages. \$4.30. MicA54-2034

**MASS COMMUNICATIONS:
NORRISTOWN, PENNSYLVANIA, 1900-1950**

(Publication No. 8588)

Robert Chase Toole, Ph. D.
University of Pennsylvania, 1954

Supervisor: Thomas C. Cochran

This study is part of a community study conducted by the Inter-departmental Seminar on Technological Change and Social Adjustment. This part of the study deals with newspapers, magazines, books, radio, television, and motion pictures. It includes an historical introduction, a newspaper content analysis, and an analysis of a household survey.

The introduction contains a brief history of mass communications in Norristown in the twentieth century. In 1900 the city had three daily newspapers, one semi-weekly, five weeklies, one weekly legal paper, and one theater. By 1950 it had only one daily newspaper, one daily and one weekly legal paper, two movie theaters, and one radio station. About 96 percent of the households had radios and 59 percent had television sets (99 and 76, respectively, in 1952).

The content analysis was based on a sample of 12 issues of the Norristown Daily Herald of 1900 and a similar sample of the Norristown Times Herald of 1950. The latter averaged about 20 pages longer than former 4 page paper, including 10 additional pages of advertising, 6 of news, 2.5 of magazine material, and 1.5 of editorial opinion. Local material had increased 14.5 pages, national and miscellaneous each 2, state 1, and foreign 0.5. Local clothing advertisers had replaced local transportation (mainly railroad) advertisers as the most important source. Local personal ("society") news had expanded more than any other type of news. The Times Herald of 1950 was more a local news organ supplementary to the Philadelphia metropolitan papers than was the Daily Herald of 1900.

The household survey was based on a random sample of 10 percent of the households in Norristown in 1952 and a random sample of 827 adults 18 years of age or over within these households. Professional interviewers asked the respondents questions covering a wide variety of community and individual activities, including the use of various mass communications media.

The average adult in Norristown at midcentury read two daily newspapers, one Sunday paper, and two magazines, but no books. He listened to the radio about one hour per day and watched television two hours, but went to the movies less than twice a year. Approximately 88 percent read the local daily newspaper, indicating that it played an important role in community cohesion.

Education was a particularly important factor in newspaper, magazine, and book reading, magazine and radio station preference, radio listening, and movie going. Income was especially important in newspaper reading, magazine preference and television watching. Ethnic background and color, or race, were unusually important in radio listening.

A particularly high percentage of Jews read newspapers, magazines, and books.

The small group of adults who were not drawn into the community by mass communications included unusually large proportions of persons without schooling, old people, foreign-born with little education, and newcomers to the city. The group who were drawn in only poorly included especially high percentages of the other foreign-born, Negro females, non-voters, lower income class, Jews, and college educated. The group who achieved the maximum of local communication included particularly large percentages of the high school educated, native whites, and younger middleaged (30-44).

Practically every literate adult was reached by daily newspapers, a very large majority by Sunday newspapers, and a large majority by magazines, radio, and television. Only a relatively small proportion were reached by movies very frequently or by books at all. Almost every adult, literate or not, was reached by at least one mass media. The extremely small group who were not reached at all consisted almost entirely of old persons without schooling who were born in foreign countries.

166 pages. \$2.08. MicA54-2035

**LOUISIANA IN THE AGE OF JACKSON:
A STUDY IN EGO-POLITICS**

(Publication No. 8589)

Joseph George Tregle, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: Roy F. Nichols

The richness of Louisiana's unique past has regrettably not been served by any comparable wealth of historical analysis. This study has been designed therefore with the double purpose of filling at least one major gap in our knowledge of the state's experience while at the same time providing a small part of that information of the workings of Jacksonian Democracy on the local level without which any generalization as to the meaning of this period in our national tradition must lack validity.

Based on the premise that political behavior can be intelligible only in the context of the sociological economic, and psychological forces of the community in which it takes place, the first part of the work attempts a survey of Louisiana in terms of these factors. Most immediately striking here is the clash of three racial factions for control of the state - the ancien population, the "foreign French," and the Anglo-Americans. These forces nurtured a political rivalry which was basically far removed from any national issues even after the state was caught up with its neighbors in the engrossing game of Jacksonian politics.

Thus Louisiana's political experience in this period must be traced on two separate planes, that of her local conflicts and that of her participation in

the larger story of the national adventure. At times the two planes merged to a certain degree, but it was always to be true that neither could be clearly understood without reference to the other.

Pervading this whole structure of political levels was a dominant spirit of aggressive self-aggrandizement which seems to have been almost the hallmark of the whole society. The ever-booming commerce of New Orleans, the expanding acres of sugar and cotton lands, the complexity of the region's racial and lingual traditions – all set underway a fierce competition for wealth and advancement which minimized to a very great extent all other concerns. Responses here were primarily personal, and even the racial conflicts of the community were in a sense but the expansion of the individual ego.

In such a scene it was natural for Andrew Jackson and Henry Clay to develop large political followings. Of the several national leaders of the period, they alone were able to engender any enthusiasm whatsoever in Louisiana. Jackson could exploit his fame as the "Hero of New Orleans" and count a great many of his old friends among those who had settled in the state. Clay was closely tied to Louisiana through his son-in-law, Martin Duralde, and became the favorite of those French who could never forgive Jackson his excesses of 1814-1815.

For the years between 1824 and 1834 these personal attachments dominated Louisiana's reaction to national politics, though there was some additional interest added by Clay's defense of the tariff and Jackson's supposed opposition to the "aristocracy" of the professional politicians. But in no real sense did Louisiana develop any consistent "Jacksonian" philosophy, though the state regularly supported the General in his bids for office and many of his vociferous followers labored strenuously to give his cause some such "reform" coloring. These leaders were so obviously opportunists, however, that they were unable to wrest state control from Clay sympathizers. Internal dissention in the party and the approaching end of Jackson's term brought the original Jacksonian movement to a close in the state and opened the way to a party alignment more responsive to issues than to men.

503 pages. \$6.29. MicA54-2036

**CHARLESTON'S SONS OF LIBERTY:
A STUDY OF THE MECHANICS, 1760-1785**
(Publication No. 8945)

Walter Richard Walsh, Ph. D.
University of South Carolina, 1954

The Charleston mechanics were important Carolinians because of their excellence as industrial artists, their manufacturing, and their significant role in the Revolution in South Carolina. They were the leading radicals of the province, opposing mercantilism since importations of British manufactures and prohibitions on the issuance of paper money depressed their trade. Consequently, these opportu-

ists, agitating in behalf of American manufacturing, were consistently the first party to move against the parliamentary program of taxation and subordination.

Because of a mutual dislike for the British monetary policy, the mechanics and the planters had common reasons to support, if not precipitate, revolution in South Carolina. On the eve of the conflict, the mechanics with their own and radical leadership drawn from the few rebellious merchants and the planters plunged Charleston and therefore South Carolina into the Revolution. Unfortunately the province was badly divided, but the British themselves united Carolinians by their oppression, confiscations, marauding, and persistence in their outmoded economic and political program.

During the war, the mechanics found that wages did not keep pace with rapidly rising prices and also that merchant-mechanics who sold their wares on credit received inadequate prices for their goods. As a result, they now acted as creditors to repudiate their former leaders and join the rebel merchants against the still indebted planters. The new alliance was responsible for much disorder in Charleston, particularly after the war. During this crisis, the mechanics, who wished to punish artisans who had become Tories during the British occupation and who had forced the radical members of the party out of their trades, found themselves, as before, competing with British importations. Together with the merchants, who were protesting British monopolies, they fomented riots against the government and accused the planters of establishing an aristocratic party which was bent on destroying the democracy for which they had fought.

Meanwhile, however, the mechanics were growing less restive, for the Revolution had brought considerable gains: their city was incorporated; artisans for the first time held elective and other important posts in the city and state governments; and they soon secured legislation requiring licenses for handicraft slave labor which some mechanics maintained caused unemployment. Thus, when the last of the Royalists departed in 1785 and the legislature aided their manufacturing, the mechanics were placated, and the city was at peace after twenty-five years of turmoil.

The Revolutionary mechanics somewhat foreshadowed the labor movement in South Carolina through the formation of various master craftsmen societies. Apart from politics, they evidenced class consciousness in that dissatisfied artisans strongly opposed British price controls during the occupation and struck against the city after the war. The disorders of 1783-1784 also took on some of the aspects of a modern labor conflict with the public over higher wages and the right to organize to improve their lot. In this struggle they triumphed.

This work on the Charleston mechanics is based on manuscripts, newspapers, books, and pamphlets, most of which are housed in the Charleston Library Society, the Charleston County Court House, the South Carolina Historical Commission, and the South Caroliniana Library.

212 pages. \$2.65. MicA54-2037

THE ERA OF THE DEMOCRATIC COUNTY
LEADER: FLORIDA POLITICS, 1877-1893

(Publication No. 8593)

Edward C. Williamson, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Roy F. Nichols

In 1877 Florida's basic problems were those of an agrarian frontier seeking population, capital, transportation facilities, law and order. The newly returned to power Democrats attempted to attract outside capital and at the same time keep the farmers satisfied. This dilemma was never completely resolved.

Because the Democratic Party was a confederation of county organization, jealousies between county leaders almost invariably resulted in political unknowns being nominated for major offices. Governors were limited to one term, first by practice then by the new constitution.

With the population of Florida during the last half of the nineteenth century almost evenly divided between Negro and white, Republicans continued to offer strong competition to the Democrats. Negro political machines, headed by white carpetbaggers, elected legislators and county officers as late as 1888.

The bitterest political battles of the era were, however, between Democrats. Whereas Governor George F. Drew, a compromise choice in 1876, proceeded with caution in regard to railroad promoters and land grants, his successor, ex-planter William D. Bloxham, opened the flood gates by effecting the Disston Sale. Because the influx of new capital meant settlers, railroads and industry, veteran Democratic county leaders approved Bloxham's course.

Known as Independents, young Black Belt rebels bestowed the label Bourbon on the supporters of the state administration. Negroes from the Black Belt and port cities, led by ex-Congressman Josiah T. Walls, deserted the carpetbaggers and together with reform Republicans joined Frank W. Pope and the Independents in a determined effort to defeat the

Democrats in 1884. The Democrats jettisoned Bloxham and nominated the state's Confederate hero, General Edward A. Perry. The tight grip of the Democrats on election machinery, and the solid support of South Florida, home of the Disston land empire, were the deciding factors in the Democratic victory.

As a fruit of the victory the Democrats and not the Independents revised Florida's constitution. The convention was dominated by the Democratic white county leaders whose counties were granted seats in the legislature far out of proportion to their population. Home rule provisions went further than Black Belt Democrats desired, a poll tax provision which barely passed being the major concession granted the Black Belt Democrats.

At the time the new constitution was framed, however, representatives of the railroads and new capital were already making their power felt within the Democratic Party. Led by Louisville and Nashville Railroad representative William D. Chipley, these interests were gradually carrying the integration of business interests and the Democratic Party far beyond the original concessions of Bloxham. Only Senator Wilk Call, a veteran ex-Whig, stood in the way as Chipley aggressively threatened to upset the balance maintained by the county leaders. Although agreeing in principle with Call in his attack on railroad land grants, "Farmer" Austin S. Mann and other agrarian reformers looked upon him as a demagogue.

Taking a leading part in embarking the Florida Farmers' Alliance in politics, Mann and other Alliance leaders affected a coalition with Chipley and the railroaders in order to gain Call's senatorial seat. The resulting fight broke the Alliance ranks and re-elected Call. Disillusioned by the coalition of the extremes, radical A. P. Baskin seized control of the Alliance, withdrew it from the Democratic Party and formed the Populist Party. The failure of this organization to gain substantial support and its resulting defeat left the Democratic Party without a major rival in the state.

376 pages. \$4.70. MicA54-2038

HOME ECONOMICS

SOME FACTORS RELATED TO THE FREEZING OF MEAT AND ITS STORAGE, THAWING, AND UTILIZATION

(Publication No. 8701)

Lendal Henry Kotschevar, Ph. D.
Columbia University, 1954

The purpose of the study was to obtain certain data which could be used to formulate a procedure for handling and cooking frozen meat in the home and institution. The changes which occurred in the thiamine, riboflavin, and niacin content of calves' liver and other commonly used muscle meats during freezing, storage, thawing, and cooking were observed. In addition, an expert taste panel was used to ascertain whether or not paired cuts of meat cooked unthawed differed in flavor from their paired mates cooked after thawing.

The results of these investigations were:

Freezing raw calves' liver for forty-eight hours resulted in no significant difference in the thiamine, riboflavin, and niacin content of fresh liver and liver thus frozen. Cooking liver which had been frozen for forty-eight hours resulted in a greater loss of thiamine and riboflavin than that which occurred in cooking fresh liver. Based on this evidence, it was postulated that freezing may make certain vitamins more labile in subsequent cooking.

As judged by the thiamine value of liver after thawing, slicing fresh liver and placing it in frozen storage for sixty days was considered the equal of the method of freezing liver in a piece and slicing it frozen. Freezing liver in a piece and thawing it for slicing resulted in a greater loss of thiamine than with either of these other two methods.

Large losses of thiamine and riboflavin occurred when liver was stored for sixty days. In contrast to the thiamine and riboflavin loss which occurred in storage, niacin increased.

About fifteen per cent of the thiamine and eight per cent of the riboflavin in frozen raw liver was lost during thawing by drip. While the quantity of riboflavin lost in thawing was fairly well accounted for in the drip, the total loss of thiamine was not; evidently in the process of thawing some oxidation or reduction of thiamine occurs. The measurable quantity of niacin increased in liver during thawing even though a considerable quantity of niacin was lost by drip.

The percentages of drip obtained from liver, steaks, and some roasts were high enough to indicate

that the losses during thawing may be significant. Certain other muscle meats, however, did not lose a sufficient quantity of drip to warrant such a conclusion. There was a difference in the quantity of drip which exuded from pork, from lamb, and from beef during thawing. Also, while the cut surface area in ratio to the volume of meat did govern the quantity of drip obtained the quantity of bone and fat in ratio to lean meat was also a factor in the quantity of drip obtained.

The drip from thawed meats in this study usually had, gram for gram, an equal quantity or slightly more thiamine and niacin, and slightly less riboflavin than the source of the drip had after thawing occurred.

In cooking fresh sliced liver the losses were respectively nineteen, fifteen, and twenty-one per cent of the thiamine, riboflavin, and niacin content of the raw fresh liver. Slightly more thiamine and riboflavin were retained in liver cooked in the frozen state than in liver cooked after thawing but the difference between the two types of meat was not found to be significant. A greater quantity of niacin was found in liver cooked after thawing than in liver cooked during thawing.

Freezing cooked fresh liver slices for sixty days destroyed no more thiamine and riboflavin than did freezing raw liver for sixty days and then cooking it. There was no increase in niacin during the frozen storage of precooked liver as there was when raw liver was similarly stored.

An expert panel was able to note a significant difference between paired meat samples which were cooked in a frozen state in contrast to the paired mates which were cooked after thawing. The judges preferred the former.

125 pages. \$1.56. MicA54-2039

A STUDY OF FACTORS THAT INFLUENCE FOAM HEIGHT AND DETERGENCY IN HOME TYPE CONVENTIONAL WASHERS

(Publication No. 8723)

Esther Masterson McCabe, Ph. D.
Columbia University, 1954

The study of the detergency, or the cleaning power, of any laundry product has always been difficult because so many factors are involved. The difficulty

is increased when full control over every factor cannot be attained. This dissertation presents an attempt to isolate some of the factors involved in washing a family laundry in a home type conventional washer. One of the factors, amount of foam formed on the surface of the wash water, has been studied in detail. The relationship of the amount of foam to the amount of detergency has been investigated particularly. The first part of this three part study was to identify constituents that appear to influence the height of foam formed in an ordinary washing machine. In the second part, an investigation was made to determine the relation of seven factors to both foam and detergency in the laundering of ordinary household linens in practical laundry equipment. In the final section, the effect on detergency efficiency of the deliberate removal of foam from the surface of the wash solution has been studied.

Exploratory studies were made to test various factors that influence the height of foam formed on the surface of the water in a washer. These washing components, including variations in amount, hardness, and temperature of water, that might be encountered when laundering at home, were studied with and without the addition of a laundry load. The amount of foam visible on the surface of the wash water was measured. In general, the amount of foam increased when the concentration of detergent increased, while it decreased when the quantity of water in the washer, water hardness, temperature, and amount of laundry to be washed were increased.

A special procedure was used to add the laundry load to each washer. This method broke down and rewet the initial foam formed on the surface of the water during the dissolving period. In all tests throughout this report one heavy duty synthetic deter-

gent and one granulated soap were utilized.

In the second part, laundry loads, made up of clean or soiled household linens, and standard soil swatches were used to evaluate detergency. In order that the experiments done in this part could be tested statistically for significance, a partially confounded factorial design was utilized. Seven factors were selected as being the most important to be tested, namely, concentration of detergent, soil on laundry, load weight, detergent, water temperature, water height, and water hardness. The purpose of this experiment was to obtain a broad picture of the effects of the factors rather than to find the combination of the levels of the factors that would give a maximum response. All results from this set of experiments were in the direction anticipated, even though they were not statistically significant.

Finally, standard soil swatches and clean laundry loads were used to evaluate detergency. Two washers were run side by side under identical conditions. The foam was deliberately removed from the top of the wash water of one washer in each test. Results indicated no difference in the units of soil removed in the two machines.

This dissertation presents the use of regularly soiled family laundries along with standard soil swatches for evaluating detergency efficiency. A method of studying height of foam formed in a washing machine under normal use conditions is developed. The use of a statistical factorial design for the study of detergency and foam is described in detail. Results of all tests indicate that the amount of foam visible on top of the wash water cannot be considered a reliable criterion for detergency.

154 pages. \$1.93. MicA54-2040

LANGUAGE AND LITERATURE

LANGUAGE AND LITERATURE, GENERAL

GOTHIC ELEMENTS IN THE EARLY AMERICAN NOVEL, 1775-1825

(Publication No. 8874)

Michael Angelo Accetta, Ph. D.
University of Pittsburgh, 1954

Gothicism had had a long history in literature before any significant imaginative writing had been attempted in America. The term "Gothic" had evolved during the Middle Ages to signify a type of architecture that featured graceful form but excessive ornamentation. In the late seventeenth and early eighteenth centuries in England, it acquired a new connotation in literature; namely, one of interest in the feudal and medieval past with particular attention to the out-of-the-ordinary, both in characterization and in events. In the late eighteenth century, Gothic novels flooded the book stalls of England and the continent and eventually spread westward across the Atlantic. In America, these novels of horror and terror found an eager audience and seem to have influenced the early efforts of American writers of the novel.

This paper is a study of the effect of this Gothicism in the early novels of the United States. The various meanings of the term "Gothic" have been chronicled and then applied to the works of the major writers of the Gothic novel in England - Horace Walpole, Mrs. Anne Radcliffe, Matthew G. Lewis, William Beckford, and Charles Maturin. With these meanings in mind, the extant early American novels from 1775 to 1825, many unknown to contemporary scholars, were analyzed to trace the use of Gothic elements by American writers. These Gothic effects have been noted in the plots of the novels, in the characters who activate the plots, in the atmospheric backgrounds, and in the various mechanical and supernatural devices used by authors to arouse, in any degree, terror or horror in their characters and in the readers of the novels.

That Gothicism was a factor to be considered by American authors was proved by the many prefaces that lamented the "Gothic" or "Foreign" influences on American reading tastes and the necessity for American writers to include such treatments in their novels if they hoped to achieve financial gain.

Although there were only one or two American novels worthy of comparison in quality to the imaginative fictions of England and only a few completely Gothic novels produced by native authors, the results of this study indicate that American authors seem to have utilized the tricks of the Gothic to compete for readers at the book shops where the latest

European fiction seldom lacked buyers if it contained the delicious thrills of the Gothic. The American novels seem to have been unnecessarily retarded by this forced imitativeness, for no American writer other than Charles Brockden Brown achieved any success outside this country and few, indeed, achieved distinction within its borders. Despite the many pleas to the contrary, American writers, consciously or unconsciously, included the characteristic devices of the Gothic in their novels and turned them, often, into formless and lifeless episodic narratives of no value as literature. 253 pages. \$3.16. MicA54-2041

THE HUMANISM OF PAUL ELMER MORE

(Publication No. 8542)

Robert Morton Davies, Ph. D.
University of Pennsylvania, 1954

Supervisor: Robert E. Spiller

Paul Elmer More was similar to the other New Humanists in his hostility to science, romanticism, humanitarianism, liberalism, and in his espousal of the dignity of the individual, love of classical literature, and assertion of moral values. He is unique among them in the persistence with which he endeavored to find some central spiritual basis upon which the value judgements of New Humanism rested.

From the time of his boyhood in St. Louis, More passed through seven philosophical phases: childhood faith, romanticism, rationalism, critical curiosity, classicism, Platonism, and Christian theism. It is important to note that the first three of these phases occurred prior to his career as a writer of criticism and had much influence on his later thought. Moreover it should be noted that More underwent disturbing influences in love, faith, and vocation during his formative years. In particular, insufficient attention has been paid to the disappointments he suffered in his efforts to become a creative writer. It should also be noted that he did not actually begin the Shelburne Essays until nearly mid-life.

These Essays caused him to consider deeply the relationship of literature to life, and he endeavored first of all to combat the disintegrating influences of romanticism and science by asserting the need for a return to the classics with their emphasis upon restraint, based upon a dualism, rather than a continuation of the drift of romanticism, based upon a degenerative monism.

In an effort to fortify the dualism of classicism, More turned to Platonism, believing that there he might find the truth of religion apart from dogma.

After about ten years of Platonism, however, he came to believe that in itself it was incapable of attracting the devotion of men because it failed to demonstrate convincingly enough the existence of the Ideal world.

Accordingly he turned to the doctrine of the Incarnate Logos as containing a spiritual truth that would appeal to the emotional hearts of men and at the same time demonstrate the truth of the Platonic, Ideal world. He believed that he found a singular confirmation of that Ideal world in the teleological development of the Hebrew-Christian religion, corresponding to the teleology of conscience in each individual.

More repeatedly expressed hostility to any dogmatizing of religion but in the development of his own ideas, he finally presented a rather complete theology, which carried over from Platonism an insistence upon an Ideal world apart from the Being and will of God. He also brought from Platonism belief in the dark Necessity as a form of evil frustrating the will of God. This results in a dualistic interpretation of the world and the concept of a limited God, a doctrine which affects virtually all of More's theology. At the same time his doctrine of the sacramental nature of life unifies his philosophy around the Incarnate Logos and deserves fuller attention than it has previously received.

Late in life, More returned to literary criticism, convinced that he had found the basis upon which the value judgements of humanism and literature reside. As a theistic humanist, he concluded that a true artist must present in his art the ethical truths of the Ideal world, perceived somewhat confusedly by Plato and then made explicit in the Incarnation. A true literary humanism will therefore accept the doctrine of the Logos and will artistically assert and demonstrate the need for self-discipline to the higher authority of the spiritual world. This will best be done by imitation of the Logos and by a fuller understanding of, and participation in, the sacramental nature of life.

296 pages. \$3.36. MicA54-2042

THE LIBRETTI OF THE RESTORATION OPERA IN ENGLISH: A STUDY IN THEATRICAL GENRES

(Publication No. 8551)

Eugene Haun, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Arthur H. Scouten

During the Seventeenth Century, for a period of some fifty years, a form later known as the dramatic opera flourished in England. Comprised of a group of fifteen pieces or more, some of which were in the repertory for many years, it reached its peak about 1690, declined rapidly and was replaced by the Italian opera under Handel.

The origins of the dramatic opera are to be found

in the English masque, not, however, in the court masque, but rather in that kind of masque which might be called the dramatic masque, such as Microcosmus, The Sun's Darling, Comus, and The Triumph of Beauty. In these, the emphasis was upon the drama rather than upon the dance, drama which was now and again interrupted by musical interludes, rising to music at climactic moments.

Of course, the first of these operatic pieces known to have been performed was Davenant's famous Siege of Rhodes, 1656. However, it is antedated by an opera-libretto of Richard Flecknoe, Ariadne Deserted by Theseus, 1654, which, in form and in manner, is after the Italian opera of the period. Flecknoe asserts as much in the important preface to the work. Furthermore, he claimed to have written music for it, but there is no known record of its performance.

After much experimentation, the English opera produced its two masterworks within a period of two years, Dido and Aeneas (Tate-Purcell, 1689) and King Arthur (Dryden-Purcell, 1690), but these works had no worthy successors.

Characteristically, the dramatic opera was a full-scale theatrical undertaking, cast in the form of a five-act drama, with one production number to each act. Romantic, almost always concluding happily for the protagonist, there was frequently much melodrama and tragic occurrence. The subject was classical or mythological. Though these characteristics were doubtless derived from Italian opera, apparently no thought was given to restricting the number of characters or to casting the roles in terms of voices, as in Italian opera. No form similar to classical Italian opera was achieved, with the possible exception of Dido and Aeneas. Full recitative was not employed. Isolated songs and production numbers were connected by long passages of heroic verse delivered in a manner which resembled dry recitative. Frequently, music was unrelated to the main action of the drama, the production numbers introduced merely for their own sake. The result was splendid diversion but not great art.

330 pages. \$4.13. MicA54-2043

FAMILY OF MERCUTIO

(Publication No. 8684)

Archibald Henderson, Jr., Ph. D.
Columbia University, 1954

The mocker at love and at women appeared in European literature before the sixteenth century. Although always a teaser of women and of lovers, the scoffer did not have to be an anti-feminist, despite the fact that he often was. The mockers first appeared full grown in fourteenth century literature. Boccaccio's Dioneo baits the ladies intermittently in the Decameron. Boccaccio's Troilus in Il Filostrato changes from scorner of women to worshipper of Cressida. Chaucer's young Troilus in Troilus and Criseyde first mocked at ladies and then fell in love with one of them.

Symposiums of the sixteenth century developed and extended the mocker tradition. Marguerite of Navarre's Heptameron (ca. 1545) adopted the symposium framework of Boccaccio's Decameron. It too presented stories told by individual members, and introduced a typical mocker, in the person of Saffrendent. He is not only scoffer but also bitter anti-feminist. Marguerite of Navarre had learned much from Castiglione's Courtier, already published in 1528. Lord Gaspar Pallavicino, Castiglione's mocker, baited the ladies unmercifully by telling stories of their folly and passion or by insinuating their inferiority. Only his grace in speech and deportment saved Pallavicino from the revenge of the irate women.

In their various ways Sir Fleur d'Amour in A Courtlie Controversie of Cupids Cautels, M. Gualter in Tilney's Flower of Friendship, Dr. Mossenigo in Whetstone's Heptameron, Phylopolo in Pasquier's Monophylo, Peratio in Greene's Morando: The Triameron of Love, and Barisano in Romeo's Courtiers Academie display the traits of the mocker at love and at women. Sir Fleur is a martial youth, impetuous, critical; a merry-maker, he resembles M. Gualter, who, though offending the ladies in his group, is allowed to remain because he is an entertaining mad-cap. Dr. Mossenigo is middle-aged, learned; he changes from mocker to lover. Phylopolo taunts Charyclea spiritedly until the lady tilts with him as Lady Emilia Pia spars with Lord Gaspar Pallavicino in Castiglione's Courtier. Peratio and Barisano follow in the footsteps of their predecessors. These scoffers as a group reveal daring, alertness, critical sense, martial bent, and teasing duplicity toward women.

Thus in the 1590's William Shakespeare had ready to hand a tradition of mockers. Putting the scoffer into plays in which conventional Petrarchan lovers appeared, Shakespeare gave the role a new and more impressive dimension. In the symposiums the scoffers had merely taken part in the discussions; as characters in Shakespeare's dramas, they not only spoke in poetry instead of prose but they also took part in the important action. Mercutio in Romeo and Juliet is not only a ridiculer of Romeo's infatuation; he is also mimic, poet, commentator, satirist, and most crucially, perhaps, contributor to Romeo's banishment from Verona. Shakespeare created in Be-rowne of Love's Labour's Lost a master of repartee in his duel with Rosaline, as well as a satirist who has his wings clipped. Benedick in Much Ado About Nothing is a mocker who is converted to love.

Some of Shakespeare's martial figures in his comedies have their own forms of mockery. For example, the Bastard in King John laughs at social affectation and at effeminacy; Enobarbus in Antony and Cleopatra warns his master against love in a temper much like that of the symposium mockers. Even Iago, villain of Othello, scoffs at women in a successful effort to entertain Desdemona. All these figures embody and express values hostile to those dominant in the dramas in which they appear. It is the finest expression of the mockers' way of providing comedy through raillery. 270 pages. \$3.38. MicA54-2044

SCYTHIA, CATO, AND CORRUPTION: SWIFT'S HISTORICAL CONCEPTS AND THEIR BACKGROUND

(Publication No. 9217)

James William Johnson, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Monroe K. Spears

The view of history which was held by Jonathan Swift was largely determined by the traditional neo-classical emphasis on Graeco-Roman literature. Through academic training, association with such men as Temple, and personal tendencies, Swift easily adopted the idea that this literature, as an expression of eternal human nature, was a means of modern man's better knowing himself. Since history was the fullest collection of information about mankind, it surpassed both fictional literature and speculative philosophy in disclosing truth. Since modern history was a truly reliable source of illuminating truths.

The classical historiographical tradition itself fostered a double concept of the function of history. Herodotus implied that historical knowledge was useful in both civic conduct and personal behavior; his Greek and Roman successors formalized this dichotomous theory. It was sustained by the Christian historians, who emphasized the importance of history as the manifestation of a pervasive Divine Plan; and it influenced Swift in its bilateral form as shaped by Christian tradition.

Believing that history contained providentially established paradigms of public and private conduct, Swift saw in ancient Rome the apex of cultural achievement. Three historically propagated factors prompted his veneration: Roman "nationalism" (military and political integration), Roman "balanced government," and Roman "virtue." In all three aspects, Swift likened England to Rome in order to apply historical truth to the present.

Negatively, the fall of Rome illustrated the pattern of all national evolution, the state being similar to a man in the stages of its life span. Swift correlated Rome's archetypal decline and fall with English history and came to the conclusion that his own age (1700-1740) marked the decline of England into a Caesarian dictatorship. Much of his pessimism regarding the age was due to this analogy.

Using history as personal example, Swift admired and tried to emulate an historiographically perpetuated ideal of conduct personified in Cato the Younger. Many of his public proposals as well as many of his private practices are strikingly similar to those of his Roman prototype.

Swift did not attempt to discern the over-all divine structure of history, but he evidenced a strong interest in history as confirmative of Biblical accounts and read widely in chronological works. Much of his interest in finding historiographical bases for Christian literature and doctrines was probably caused by his opposition to the iconoclastic deists and free-thinkers. He made no extensive use of chronology because of its perversions in the hands of Christian "progressives."

Swift's interest in the influence of climate on nations and men was historically fostered. He adopted almost verbatim Graeco-Roman beliefs in the effect of heat and cold on topography, national character, politics, and human physique and intelligence.

Swift's pessimistic outlook on the trend of affairs in England was widely shared by British historians. His immediate successors and contemporaries were convinced that England was declining. Tradition gave four reasons for inevitable decline in human concerns: time, climate, luxury, and – as the fundamental cause – human degeneration as seen in the fall from Grace. Swift's pessimism was compounded of these concepts.

The evolution of Swift's literary career indicates his successive applications of historiographically derived principles to English current events. He first attempted to halt the decline by the means suggested in history: political balance, controls, magisterial example. Finally, he believed aid could come only by divine intervention.

A knowledge of Swift's historical concepts shows that he was not fatalistic or unreasoningly misanthropic or erratically egotistical in his writings. It illustrates again his intellectual thoroughness and consistency. 396 pages. \$4.95. MicA54-2045

SENTIMENTAL OPTIMISM IN THE WORKS OF CHARLES LAMB

(Publication No. 9208)

Morris Paschall Landiss, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Claude Lee Finney

This thesis is a study of the influence of the philosophy of sentimental optimism upon the works of Charles Lamb. This philosophy was influential in shaping religious, social, and political thought in England during the eighteenth and nineteenth centuries. Foremost among the philosophers who developed and popularized sentimental optimism were Archbishop William King; Anthony Ashley Cooper, Lord Shaftesbury; and Francis Hutcheson. The writings of these men received widespread circulation and influenced every type of literature. Charles Lamb, in common with many Romantic writers, was influenced by the sentimental attitude toward life; unlike the great Romantics, however, he did not entirely abandon that philosophy but allowed it to influence his entire literary career.

The first chapter of this thesis is a study of the history and development of sentimental optimism in England. The major tenet of this philosophy is that the universe, created by a benevolent First Cause, is, in all its varying parts, good; and that, therefore, whatever is, is right. Inherent in Plato's philosophical works and suggested in the writings of Plotinus, the philosophy owes its revival and popularization in England to a reaction against the philosophy of

egoistic materialism advanced by Thomas Hobbes in his *Leviathan*. Archbishop King and Francis Hutcheson were interested in refuting the extreme Calvinistic concept of the Deity as a stern God of vengeance and establishing, in the place of that philosophy, the concept of God as a benevolent Father. Lord Shaftesbury centered his attention on a benevolent human nature and popularized the theory that human nature is, in its essence, good, and that each individual possesses a moral sense which intuitively and unerringly acts as a guide to virtuous action. The philosophy of sentimental optimism is found to be a complete philosophy of life, manifesting its presence in a sentimental ontology and cosmology, epistemology, psychology and ethics, and politics and sociology.

The second chapter of this thesis is an examination of Lamb's poems to determine to what degree they show the influence of sentimental optimism. The volume of Lamb's poetry is small, and reference is made to all poems which aid in the delineation of his philosophy. His early poems are found to bear the influence of the sentimental sonnets of the Reverend William Lisle Bowles and of the early poems of Coleridge. They show, also, in their extreme appeal to the sentimental feelings, the influence of Lamb's unhappy domestic situation. Lamb is found to accept the entire philosophy of sentimental optimism and, in addition, to indulge frequently in sentimentality, the literary defect arising from that philosophy.

The third and fourth chapters of this thesis note in Lamb's novel, his dramas, and his *Elia* essays the influence of sentimental optimism. These works also show that Lamb became aware that his writings were more sentimental than those of his contemporaries and that he tried unsuccessfully to rid himself of his tendency toward sentimentality. Support is found for this theory in a comparison of the manuscript copies of some of his works with the later printed versions. The late essays present proof that Lamb was never successful in ridding himself of the sentimental attitude.

The final chapter is an examination of Lamb's critical writings. A basis for his critical estimates is found in sentimental optimism. He is discovered to be a psychological critic, basing his criticism in psychological principles, but, at times, being influenced in his judgment by the appeal to the moral sense made by the works under consideration. Lamb's writings show him to have become less sentimental as he grew older. He is never found to be entirely free of sentimental optimism.

405 pages. \$5.06. MicA54-2046

AN INTRODUCTION TO THE POETRY
OF WILLIAM BARNES

(Publication No. 8715)

William Turner Levy, Ph. D.
Columbia University, 1953

William Barnes who was born in 1801 and died in 1886 is called by Chambers's Encyclopaedia "perhaps the first of English purely pastoral poets." He was born in Dorset and spent all of his life there. It was a life not outwardly exciting: he spent some time as a solicitor's clerk, but soon turned to teaching which he continued until 1862 when, having obtained a Cambridge degree, he became rector of Winterborne Came. He was an amateur antiquary and engraver, and wrote many articles and books on philology. Not a trained linguist, his books in this area are of little value - with the exception of his investigations on the grammar and glossary of the Dorset dialect.

Although Barnes wrote poems in standard English, he is at his happiest as a dialect poet and was and is known as the Dorset Poet. His public readings and published volumes made his poems "household words" in Dorset, but the dialect militated against his ever reaching a wide audience. Not an espouser of causes, Barnes's beautiful lyrics - written with a scholarly and aesthetic grasp of poetic techniques in many western and eastern languages - have always been most appreciated by his fellow poets. He was praised by Tennyson and Patmore, Hopkins and Hardy. His neglect is easy to understand, but nevertheless unfortunate. His name is seen and vaguely remembered, but his position as the foremost rural poet of the nineteenth century remains unacknowledged. No critical treatment of any length exists, and a collected edition of the poems remains unrealized.

It has been the prime objective of this essay to determine which of the poems out of some five hundred were the best - and why they were the best. The poet's life is of interest to the reader and those parts of it which present the situations out of which the poems grew are given chief attention. The dialect has been treated in a manner that does not neglect either its importance or the need for providing the uninitiated reader with an easy mastery.

The central volumes, the core of Barnes's poetical work, are: *Poems in the Dorset Dialect* (1844); *Homely Rhymes, A Second Collection of Dorset* (1850); and *Poems of Rural Life in the Dorset Dialect, Third Collection* (1862). This essay discusses the poetry in three major categories: 1.) Dorset Folk; 2.) Nature; 3.) Love and Faith. There is an Appendix on Dorset grammar and orthography, and an Appendix which is a Note on Barnes's influence on Thomas Hardy's poetry.

William Barnes is no run-of-the-mill parson poet writing on nature. He has written two score of fine poems and a few that may stand with the best of his century. Not a great poet, he is a minor poet of great distinction, the finest dialect poet England has produced in modern times. More than a faithful recorder of a vanishing way of life, he is the permanent delineator of unchanging moods. And his richest poems

are those recording the joy and grief of human love and the undefinable awareness of man's dependence on God. 297 pages. \$3.71. MicA54-2047

THE RHETORICAL ASPECTS OF
RICHARD ROLLE'S *MELOS*
CONTEMPLATIVORUM

(Publication No. 8716)

Gabriel Michael Liegey, Ph. D.
Columbia University, 1954

During the latter half of the Fourteenth and throughout the Fifteenth Century, Richard Rolle, Hermit of Hampole, was probably the most widely read, in English or in Latin, of all English writers. He was born in Thornton, Yorkshire; was sent to school by his parents; was supported at Oxford by Thomas de Neville; was proficient in study; left Oxford in his nineteenth year; became a hermit, with the resolve to advance in contemplative life; and labored until his death in 1349 to bring to others the fruit of his holy life by his writings.

The *Melos Contemplativorum* has been declared the most important of Rolle's works. It is one of his unedited, early, Latin writings, extant, in whole or in part, in twelve manuscripts. It may be classified as a work of mystical literature, having for its subject Divine love, the achievement of which is won by the lover's renunciation of the world, the contemplation of God, and, finally, union with Him. The thought reflects a wide and profound knowledge of Holy Scripture and scriptural commentary, a familiarity with ascetical and mystical literature, and a keen perception of contemporary life. The experiences of the mystical life, related by Rolle, are essentially the same as those found in writings of this kind.

It is Rolle's style which makes the *Melos* unique and to some extent difficult. From at least the Fifteenth Century its Latin was deemed unique enough to warrant the composition, "by various doctors," of a glossary of its difficult words; while in our own times the greatest of Rolle scholars, Miss Hope Emily Allen, asserts that the sense of the *Melos* is hidden away in its rhetoric.

Rhetorically, the *Melos* might be called a well-ordered deliberative composition, comprising an introduction and division (Chaps. I-V), a confirmation (Chaps. VI-LV), and a conclusion (Chaps. LVI-LVIII). The confirmation, or body, of his work is presented in a series of postills, which are a kind of discursive exegesis of a Biblical text, chosen for its pertinence to the particular phase of mystical life being described. In these postills Rolle employs all the arts of speech at his command: glossing, syllogistic reasoning, preaching, meditation, and song. Often, there is a recurrence of theme in different postills, making for a repetitiousness, which is the outstanding fault of the work as a whole. Each of the forms, within the postill, demands its own style, and thus the language is, in turn, either grand, moderate, or subdued.

In the Melos there is no feature of composition so evident as is its alliteration. Quite regularly, ten to thirty consecutive words bear consonantal or vocalic alliteration. Frequently the alliteration fits into a pattern of rhythm, producing verse not unlike Middle English alliterative verse of Rolle's own age. In these verse portions there is found a four-lift line, usually end-stopped and alliterated. The prose portions of the Melos are marked by the presence of the cursus with a sufficient frequency to render the passages pleasingly rhythmical.

The present writer believes that it is Rolle's figurative language which really makes the Melos difficult, but, in parts, so attractive. From the start, the language of the Melos is emotional at the same time that it is thoughtful; and figurative language, the vehicle for this two-fold phenomenon, flows naturally from Rolle's pen. Rolle's paradoxes and metaphors, so effectively revealing and pleasingly difficult, are of the kind that flowed down in the stream of devotional literature to writers like Herbert, Donne, and Crashaw.

157 pages. \$1.96. MicA54-2048

A CENTURY OF MELODRAMA ON THE LONDON STAGE, 1790-1890

(Publication No. 8727)

Gloria Estelle Mandeville, Ph. D.
Columbia University, 1954

English melodrama developed largely from native roots to become the most popular theatrical entertainment in Victorian England. Even before the first play that was officially announced as a melodrama on an English playbill, Holcroft's A Tale of Mystery, adapted from Pixérécourt's L'enfant du mystère, was produced in 1802, all the separate ingredients of melodrama could be found in the Gothic dramas of Monk Lewis, such as The Castle Spectre, in the "mixed dramas" of Colman and Kemble and Cumberland, and in such illegitimate theatrical fare as the burlettas, the aquatic dramas, and the spectacles. Only the name "melodrame," from the Greek words "melos" and "drama," was borrowed directly from the French.

Melodramas were popular primarily because they were fashioned by their practical and unpoetic authors to suit the public taste, not to work out any aesthetic convictions. Their audience was drawn mostly from the lower classes who preferred their situations emphasized and their morality simplified.

As the tastes and preoccupations of this audience shifted, so, accordingly, did the themes and settings of melodrama. In the beginning of the nineteenth century a newly-industrialized population showed a fondness for romantic subjects; One O'Clock; or The Knight and The Wood Daemon, Timour the Tartar, The Miller and His Men, and The Cataract of the Ganges appealed to this group. But in the 1830's a change occurred and domestic problems set in domestic scenes corresponded with the growing spirit

of Victorianism. Victorine, The Rent Day, The Flowers of the Forest reflected this taste. In another two decades, however, melodramas of the cloak and sword, laid in France and filled with high-born intriguers, became popular. Richelieu, The Corsican Brothers, and The Lyons Mail are outstanding examples of such plays.

All the century's productions, though, were dwarfed when Dion Boucicault devised a way to make use of most of the elements already proved popular and added besides a startling "sensation scene." His Colleen Bawn, Arrah-na-Pogue, The Octoroon, The Streets of London established the sensation drama a high point in melodrama's fortunes, and closely connected with the 1860's new interest in mechanical ingenuity. The sensation scene remained a requisite part of melodrama for the rest of the century, but to it was added a new realism in the treatment of urban themes and urban settings. The Ticket-of-Leave Man, The Lights o' London, and The Silver King illustrated this successful combination of elements.

Without pretensions and quite simply melodrama prepared the way for the modern realistic drama of ideas in a way that has not been adequately recognized. Besides keeping public interest in the theatre alive during a time when more ambitious drama had lost its appeal, melodrama also introduced techniques of realistic production and sketched realistic problems that were later to be adopted by modern dramatists. Shaw acknowledged his debt to the Adelphi melodramas; Pinero and Jones owed other debts. The link between the highly theatrical melodramas beloved of the entire nineteenth century and the first modern dramas is a close one.

370 pages. \$4.63. MicA54-2049

PETER STERRY, A PLATONIC INDEPENDENT

(Publication No. 8745)

Mary Ann Nevins, Ph. D.
Columbia University, 1954

"Peter Sterry, a Platonic Independent" re-organizes the thought of Peter Sterry, Cambridge Platonist and Independent chaplain to Cromwell because he freely synthesized Platonism and Puritanism into an original philosophy, in itself interesting, which represents a variety of English Independency. It does not consider Sterry's life, adds no new information about his relations to major contemporaries, but concentrates upon building up from materials scattered in print and manuscript the structure of his thought, a thought dominated by the idea of unity.

The Introduction shows how Sterry's varied and delightful prose style is consciously controlled by a theory of the hierarchy of man's faculties. Since he developed the style to address man's faculties in order, the many kinds of writing in Sterry are harmonious and consistent expressions of man's internal uniting of modes of apprehension. The first four chapters then reconstruct Sterry's philosophy. The last two

isolate his special interests, free-will and imagination, show what sources he drew upon in thinking about and where his thought stands among contemporaries.

Since Sterry's major concern is seeing unity and harmony in disparate phenomena, Chapter I "The Nature of Man" begins with Sterry's understanding of man as the symbol of the harmony of the universe and the perceiver of that harmony. It shows how Sterry synthesized the Pauline formula - man is composed of body, soul and spirit - with the neo-Platonic doctrine - soul exists before entering body. The descent of the soul into body determines Sterry's understanding of the nature of man; the intellectual reascent of the soul to God constitutes his understanding of the function of man. The first chapter discusses the resulting epistemology and ethics.

Chapter II "Nature and Man" pictures the descent of all being from God, the regular contraction of essence into existence which creates the universe. The order, meaning and function of external nature is outlined in this chapter. Sterry's cosmology owes nothing to the new science but here appears an adaptation of Cusanus and Ficino.

The third chapter "Nature, Man and God" considers the way man deduces God from external nature. God described by reason as Unity-Variety-Union is here represented. Again, the sources of Sterry's thought are clearly neo-Platonic.

Chapter IV "God, Man and the Mediator" treats God as He is understood not by reason but by 'spirit' in revelation. It gives an account of the reascent of all existence to God once it has reached the lowest point in creation. Here Sterry's view of the nature of the revealed God, his Christology and eschatology is outlined. The eschatology brings to a full circle the harmony of the universe, when all that descended from God is seen to reascent. Sterry's revealed theology is heterodox Independency.

Chapter V "Sterry and Free-Will" outlines Sterry's modified determinism showing indebtedness to Plotinus, Proclus, Cusanus, Ficino, the *Theologia Germanica*, and relationship to his contemporaries Rous, Vane and Brooke. His position is nearer the pre-Quakers 'than any other single group's but has affinities to the Cambridge Platonists.'

Chapter VI "Sterry and Imagination" does for the imagination what the preceding chapter does for the will. It shows Sterry's originality, his use of Plato, Plutarch, Plotinus, Augustine, Boethius and Pico and then examines relations to contemporaries. His thought parallels Culverwel and Smith in some respects, is closer to Traherne and has much in common with Milton and Owen.

The usefulness of the thesis lies partly in its full documentation both from Sterry's published and unpublished writings, of his sometimes strikingly original and sometimes suggestively commonplace thought. It lies partly in the illumination of the eclectic nature of Platonic Independency represented in Sterry.

427 pages. \$5.34. MicA54-2050

GODEY'S LADY'S BOOK AND FICTION:
1830-1850

(Publication No. 9211)

Joseph Nichols Satterwhite, Ph. D.
Vanderbilt University, 1954

Supervisor: Richmond Croom Beatty

Frequently the literary critic and historian misses the forest because of the trees. In his devotion to the salient figures he ignores, willfully or for lack of time and space, figures or influences which, although once important parts of the cultural matrix, have been shrunk by the perspective of years to comparative insignificance. Such has been the case with *Godey's Lady's Book*, from 1830 to 1850 the most widely circulated purveyor of popular fiction in America, but now reduced to an apologetic, peripheral existence in footnotes or parenthetical asides.

This study attempts to restore to *Godey's* its contemporary glory and influence and thereby its meaningful relationship to its times. This relationship is threefold: first, *Godey's* accurately reveals popular fictional tastes in the first decades of modern America; second, *Godey's* provides a contemporary record of the short story in its uncertain amorphous stage when no structural theory, save that of Poe, existed and the genre vacillated between the two polar forms of anecdote and truncated novel; third, *Godey's* fugitive fiction furnishes a contemporary gauge for a more significant appraisal of the achievement of contemporary major figures such as Melville and Hawthorne.

Two introductory chapters dispose of matters ancillary to an analysis of *Godey's* fiction: the first reviews the peculiar situation which fostered the age of periodical fiction - the depressed state of American letters, the strong nationalistic demand for a native culture, and the rise of a fiction-reading public - and the second chronicles *Godey's* vigorous years, 1830-1850, when it published the proud names - Irving, Poe, Hawthorne, Simms, Holmes, and Paulding - along with the slightly less august - Harriet Stowe, Bayard Taylor, and N. P. Willis - and a myriad of now forgotten, but once best-selling writers.

The main study considers five aspects of the fiction: the critical principles which guided its selection, its form and technique, its tone and attitude, its perennially popular themes and motifs, and the subgenres in which it expressed itself. The triple standard by which *Godey's* editors judged fiction was a composite of inherited attitudes and contemporary influences, the provisions that fiction be morally didactic and circumstantially true being the heritage of earlier days when fictionists claimed these attributes to vindicate their suspected prose and the insistence on American subjects and themes a shrewd appeal to the militantly patriotic spirit of the age.

Technically *Godey's* fiction marks the near high point in the dissociation of form and content. Having little interest in technique, its authors wrote surface fiction and depended on two faulty devices - sentimentality and melodrama - to achieve the emotional

dissipation their readers demanded. Tonally it perpetuated the sentimental miasma inherited from Sterne and transmitted by the early American novelists. Thematically it capitalized on the lugubrious – unhappy love, domestic tragedy, lingering “declines,” patient suffering, and death – and on those motifs which echoed the expansive optimism of the era – social and political equalitarianism, self-reliance, the infinite possibility of achievement, and the indisputable superiority of everything American. These it couched in two sub-genres – the short romance and the tale of domestic sensibility, the latter a detailed chronicle of the narrowly circumscribed world of its female readers.

The fugitive quality of this fiction is emphasized when it is compared with that of Melville and Hawthorne. But, in its appeal to the lowest common reading denominator, it reflects a far broader, if more shallow, range of attitudes, ideas, and ideals than does much of the work of the so-called major writers, and it widened, if it did not deepen, cultural roots. It was the first and perhaps the most thoroughly proletarian literature we have had in this country.

318 pages. \$3.98. MicA54-2051

CARLYLE AND THE IDEA OF PROGRESS

(Publication No. 9212)

John Weamer Stevenson, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Edgar Hill Duncan

The Idea of Progress is of comparatively recent origin in the history of ideas, its beginnings appearing simultaneously with the rise of science in the seventeenth century. It emerged in the eighteenth century as a doctrine espoused by the philosophers and intellectuals as the rationalist answer to the theological view of the world. With the discovery of certain invariable natural laws governing the movement of the physical world, it was held that there must exist such laws governing the movement of society. The philosophers of the age postulated an optimistic philosophy of history in which they maintained their superiority over that of the past, especially in the arts and sciences. The result was an optimistic faith in the power of reason and of man to chart a unilinear path to an ideal universe, and with the accumulation of knowledge and the growing ability of science to predict the course of natural laws, there was every reason to expect an even greater advance in the future. The heavenly city of St. Augustine was placed in this world, made possible by man's melioristic tendencies. Diderot sums up the spirit underlying the idea in an epigram: “La posterité pour le philosophe, c'est l'autre monde de l'homme religieux.”

But the Idea of Progress is not a scientific fact; rather, writes J. B. Bury, it is a theory and “Belief in it is an act of faith.” Moreover, the idea is not

restricted to a secular and rationalistic view of the universe. There is another view of history which sees progress as the unfolding from era to era of a supreme design in the drama of history, and which sees history as an organic fulfillment of a divine ideal. This conception had its expression in the German Romantic movement, and unlike the rational historians who looked on the past as unenlightened, the transcendental historians looked on the past as part of the unity and organic growth of civilization. Indeed, their interpretation of history was moral and had as a primary doctrine the belief in the spiritual nature of man and the progressive development of that aspect of man's nature. And it was these two forces, the one empirical and the other teleological, which entered the nineteenth century and which Thomas Carlyle had to choose from. Carlyle spent the formative years of his life (1819-1830) searching for an historical design, and being an idealist he came to believe earnestly in the eventual unfolding of the divine idea and of a coming era of belief and fulfillment.

History for Carlyle is rhythmic and recurring, tending to spiral slowly upwards toward the goal of spiritual realization. He made no specific statements concerning the future, but in his most significant writings and lectures he did formulate a philosophy of history that was progressive and optimistic. He adopted from Goethe the notion of the cyclic recurrence of ages of belief with ages of unbelief, and to account for the transition between periods he included in his concept of change the phoenix symbol of life through death. He divided the history of the world into three broad ages: the classical pagan world, with its distinct eras of belief and unbelief; the Christian cultural world with its epochs of unity and scepticism; and the third period, emerging, he believed, out of the revolutionary death struggle of 1789. However, as he grew older he tended more and more to postpone any definite hope for a new creative era, such as he felt was apparent in the German literary movement, into the far distant future. Democracy and “theories of government,” discouraging as they did the appearance of great heroic figures, were forms of anarchy and unbelief which would have to run their course before the age of spiritual fulfillment could be realized. “Mankind is advancing somewither,” but it needed yet to throw off the destructive forces of scepticism and anarchy before the heavenly city could be attained. And what that city would be he left to God's design of the universe.

290 pages. \$3.63. MicA54-2052

ELIZABETHAN PSYCHOLOGY AND THE POETRY OF EDMUND SPENSER

(Publication No. 9219)

James Tate Stewart, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Claude Lee Finney

Since Edward Dowden's pioneer article, “Elizabethan Psychology,” in the *Atlantic Monthly* in 1907, the importance of this psychology in the interpretation

of literature has been well established in the studies of Shakespeare made by Ruth Leila Anderson, Lily Bess Campbell, and Theodore Spencer and in the study of Milton made by William B. Hunter. The present study examines the poetry of Edmund Spenser in the light of Elizabethan psychology.

The complex system of psychology known to the Elizabethans combines ideas from Plato, Aristotle, Galen, Hippocrates, Scholastic philosophers, medieval mystics, Renaissance Neo-Platonists – such as Ficino, Castiglione, and La Primaudaye – and encyclopedists such as Stephen Batman. It assigns a soul to every part of man which has life, and certain faculties to each soul. Basically there are three souls – vegetable, sensible, and rational. Faculties of the vegetable soul include nourishment, growth, and reproduction. Practically all authorities agree on this classification. Though there may be less agreement about the sensible soul, most authorities assign to it the external senses, movement, and the common, or internal sense. The common sense includes imagination, memory, and a form of reason. The rational soul is the immortal part of man; it contains the understanding – a higher form of reason – and the will. In this system higher faculties should control lower faculties; but there is likely to be constant strife between the rational soul and the lower souls. Plato's theories of the relationship of reason, passion, and desire are especially important in the study of the warfare of the rational soul and the sensible soul. The humours, more a physiological than a purely psychological problem, constitute another feature of this tradition, but the humoral theory is of minor importance in Spenser.

Although Spenser's ideas on the origin and destiny of the immortal part of man are generally those of an orthodox Christian, in the Garden of Adonis episode of the *Faerie Queene* the poet accepts pre-existence of the soul. There he presents a cosmology based on Marsilio Ficino. The Garden of Adonis is the Realm of Nature, a stage of creation nobler than the visible world, and it is the abode of souls. Spenser also presents the sun as the immediate agent of creation.

Spenser makes a clear distinction between the two kinds of reason, the intuitive and the logical. In a remarkable combination of Platonism and medieval mysticism, the Red Cross Knight achieves the level of the understanding and receives a beatific vision during his visit to the hermit Contemplation. The understanding is represented also in the figure of Sapience in the *Hymne of Heavenly Beautie*.

The vegetable and sensible souls of man are treated in the House of Alma episode of the second book of the *Faerie Queene*. There the faculties of these souls are described in detail, and there is also some representation of the dangers and difficulties to which the mortal body of man is liable.

The second book also contains the most extended treatment of the war between the reason and the passions, powerful agents of the sensible soul. Sir Guyon, Knight of Temperance, aided by the Palmer, representing reason, resists the concupiscible and the irascible passions, the former stemming from the pursuit of pleasure and the latter from the avoidance

of pain. The theme of the second book is the struggle between reason and passion, perhaps the most widespread concept of Elizabethan psychology.

Spenser's most significant use of psychology is in his treatment of love. There are many levels of love, and the nobility of love may be judged by the particular faculty which is involved. In the *Fowre Hymnes* each step on the ladder of love represents the operation of a different faculty of man – from sensation through imagination, reason, and will, to the operation of the understanding, through which the beatific vision may be achieved. Faculty psychology is also important in Spenser's treatment of marriage. Friendship, being free of sensual diversions, is the noblest form of love. In the Temple of Venus and Garden of Adonis episodes, Love is also presented as the cosmic force on which all order and creation are ultimately based. 289 pages. \$3.61. MicA54-2053

THE EIGHTEENTH CENTURY BACKGROUND OF HAZLITT'S CRITICISM

(Publication No. 9213)

Leon Cogswell Wilkerson, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor Claude L. Finney

The purpose of this study is to show that William Hazlitt's critical principles had their origin in eighteenth century philosophy and literary criticism, and to explain Hazlitt's critical principles as the outgrowth of eighteenth century intellectual ferment and controversy. The intellectual backgrounds of Hazlitt's principles are analyzed in the first half of the thesis, and Hazlitt's critical system is analyzed and defined in the second half.

Very little critical research has been done to place Hazlitt's critical system in its eighteenth century background. But in order to understand Hazlitt's critical system, one must analyze it as a long development of eighteenth century critical thought.

The criteria of nineteenth century Romantic criticism as developed by Wordsworth, Coleridge, Hazlitt and Lamb, belong to the psychological school of criticism which had its origin in the eighteenth century and reached its climax in the great Romantic criticism of the nineteenth century. This psychological school of criticism was developed in particular by critics under the influence of Longinus. The psychological critic approaches criticism either through the poet or the reader. He is interested in the way in which the poet expresses his mental reaction in poetry, or in the reaction of the reader to poetry. Hazlitt employs the second approach. This type of criticism is judicial, but its standards are psychological instead of the formal standards of traditional classical criticism. This school of criticism is a revolt against the neo-classical school.

Hazlitt's criteria of esthetic judgment, as analyzed in this thesis, may be listed as follows: First of all,

Hazlitt looks for Truth in poetry; and he believes that Truth is not one but many. Truth comes from such sources as experience, emotion, imagination, and understanding. Hazlitt finds nature revealing Truth; and the man of genius, the man with a strong imagination, demonstrates the "thousand aspects" of nature to others through poetry. He considers that poetry represents reality through all the faculties of the mind. In the second place, Hazlitt believes that poetry is Power, showing itself through everything – inanimate things, plants, animals, and man. And he judges poetry by its representation of this Power. In human nature, he finds this Power in the emotions. Hazlitt contends that fear, hope, love, hatred, contempt, jealousy, remorse, admiration, wonder, despair are all manifestations of Power. Beauty consists of harmony in nature; and sublimity expresses great Power. The poet must be conscious of all these factors and express them with Gusto, or intense feeling, which is the third criterion of Hazlitt's esthetic judgment. A strong, forceful, vivid language must be employed to portray properly the power which the poet finds in nature and man. For Hazlitt, the finest examples of the poetic expression of Gusto are to be found in Shakespeare's *King Lear* and Milton's *Satan*. The fourth criterion is Imagination. The two standards of Imagination are: (1) vivid sensory imagery, and (2) organic unity, a product of the shaping and creating power of the Imagination. The fifth criterion is objectivity, or disinterestedness, or to use a modern term, Empathy. The sixth and final criterion is Style. The entire effectiveness of a poet depends upon his Style. A good Style, according to Hazlitt, may either be simple and natural, as was advocated by Wordsworth, or it may be artistic, as was the Style of Milton and Shakespeare.

Because of his knowledge of critical ideas, Hazlitt was able to convey to his readers the same pleasure he himself extracted from the masters. This function seems to be the chief end of his criticism. Even though Hazlitt's writings were made up of personal evaluations, based upon psychological principles, it should not be incorrectly construed that he made them without serious and discerning consideration. The manner in which he combined "philosophic acumen with literary sensibility" is evidence of his genius.

276 pages. \$3.45. MicA54-2054

LANGUAGE AND LITERATURE, CLASSICAL

THE GOSPELS AS EPIC

(Publication No. 8953)*

Cormac Gerard Cappon, Ph. D.
Yale University, 1953

This dissertation deals with the poetic version of the gospels composed in Vergilian hexameters by a

by a Spanish priest, Gaius Vettius Aquilinus Juvenus, and published by him during the reign of the emperor Constantine in approximately the year 330. The standpoint from which this dissertation was undertaken is that of the Christian poet's appropriation and reworking of Vergilian material. Since the influence of Vergil may be clearly seen in every page of Juvenus, this dissertation is concerned with the manner in which Juvenus adapted Vergil rather than with the fact of his obvious imitation of the earlier poet, and attempts to show the many-sided character of this imitation.

The introduction describes the place occupied by Juvenus in the history of Christian Latin literature and shows him as a member of that group of Christian writers who, in their endeavor to expound and defend the doctrines of the new faith, presented them in a style and language which the educated pagan would recognize as that of the classical authors acknowledged as masters in the field of Latin literature.

Chapter I contains a listing and classification of some nine hundred parallels between the two poets, considered merely from the verbal point of view, and in this respect continues one aspect of the work done by previous commentators.

Chapter II is devoted to an examination of the entire poem, episode by episode, in which the verbal parallels between Juvenus and Vergil are considered from the contextual point of view. In other words, this chapter endeavors to ascertain whether there is anything in the context of a given Vergilian phrase or half-line used by Juvenus which may have influenced the poet's choice of the Vergilian expression in question. The evidence presented in this chapter indicates that such is unquestionably the case, and uncovers various patterns of Juvenus' exploitation of Vergilian material, ranging from the relatively simply type wherein the context of a Vergilian expression found in Juvenus involves a situation bearing some resemblance to a particular scene from the gospel, to instances of an extremely subtle and complicated pattern of adaptation of Vergil by the Christian poet. Each case is considered as it occurs, and although Juvenus' use of Vergil is too complex to be compressed into a concise formula or series of formulas, nevertheless various patterns of his adaptation of Vergil may be discerned and up to a point classified.

Chapter IV, the concluding chapter, is devoted to a setting forth of these patterns.

Chapter III deals with certain questions of text criticism which have arisen as a result of the matter which is treated at length in Chapter II.

*Positive copies of this dissertation can be obtained from Yale University Library.

LANGUAGE AND LITERATURE,
LINGUISTICSCHANGES IN THE STRUCTURE AND
CHARACTERIZATION OF THE ENGLISH
MORAL PLAY AFTER 1516

(Publication No. 9215)

James Stewart Allen, Ph. D.
Vanderbilt University, 1954

Supervisor: J. A. Bryant, Jr.

The medieval English moral plays and the later plays that contained morality features have long been recognized as a cohesive body of dramatic literature, considerable in number and significant in influence on English drama. In the early plays, from the first ones that now exist down to Skelton's *Magnificence* (1516), only one theme was present: the salvation of the soul of Man. The story of this salvation was told by means of allegorical figures who represented both the virtues and the vices and also such superior figures as God himself. Each of these figures was designed to represent one concept or value, and the relationship of the character to that concept or value was always that of one-to-one. These concepts of values which the characters represented were always theologically orthodox ones, and the audience was not expected to challenge or question them; consequently, the early moral plays were in effect dramatized sermons, and seeing them amounted to a reaffirmation of faith.

The devices of plot used to tell this story were almost as uniform as the theme itself. There were individual variations in arrangement, but the early plays all show Man as the central figure, alternately sinning and repenting but finally saved as death overtakes him. The Virtues and the Vices contend for Man, who is more the prize than an active agent.

The changes that took place beginning with and following Skelton's *Magnificence* (1516) may be described as falling into two areas: structure and characterization. The playwrights saw that the structure of the early morality plays, with its two contending sides could be made to carry other themes without great alteration; thus through its structural framework the moral play made one of its two great contributions to the English drama: the provision of a means by which controversial material might be dramatized. Nevertheless, each thematic change brought its revision in the basic structure. The tracing of these changes shows that that structure was sufficiently sturdy to provide a pattern by which new themes could be explored on the stage yet sufficiently flexible to enable a wide variety of questions to serve as themes.

The other contribution had to do with characterization. As the themes changed and with them the structure, the characters were also altered. Instead of the early allegorical characters that they had been, they became more and more symbolic, in that their actions and speech represented not just one, but a great number of shifting and interweaving ideas and

relationships. By watching them, the audience could explore areas of life which were not amenable to common definition – indeed, were not explorable except by the symbolic process. The characters gradually lost nearly all trace of the old allegorical relationship and became more nearly like real people caught living in a dramatic situation.

By providing the framework of the morality structure upon which to work new themes and the characters which were capable of being developed, the moral play made its great contributions to the highest development of the English drama.

274 pages. \$3.43. MicA54-2056

A GRAMMAR OF KOREAN

(Publication No. 8564)

Fred Lukoff, Ph. D.
University of Pennsylvania, 1954

Supervisor: Zellig S. Harris

The phonology and morphology of Korean are described, with a brief sketch of the syntax of the clause. The speech described is basically that of the educated classes of Seoul, but references are also made to the forms of other dialects.

The analysis is made on the basis of informant data collected in the United States over a period of several years.

The purpose of the grammar is to describe the basic structure of Korean in such a way as to achieve readability together with conciseness. While no text material is included, a fair number of example sentences are included. Tables of consonant clusters and charts showing how certain morphemes combine are also included.

The formal procedures and criteria of analysis of descriptive linguistics are used. There is no general discussion of these principles, however, as they are well known. However, there are discussions of procedure and of reasons for selecting one solution over another in the case of particular problems.

The phonology chapters deal with the allophones (sound-types), their grouping into phonemes, and morphophonemics. A tentative list of phonemes is first set up, and then, upon re-phonemicization, the final list of phonemes is set up. These phonemes are: the vowels, /i, ʌ, u, e, ø, o, æ, a/; the consonants /p, t, c, k, s, h, m, n, ŋ, l, w, y/; the junctures "close", "open", "intermittently close"; the contours /, . ? !/. Occurring vowel clusters and consonant clusters, and the structure of the syllable, are described.

The morphology chapters deal with the various morpheme classes and their distributions. The major morpheme classes are found to be noun stems, verb stems, noun suffixes and verb suffixes; in addition, a class of adverbs and a class of introductory particles are recognized.

The basic structure of the word is analyzed as consisting of a stem plus one or more suffixes. The various constructions (compounds, phrases) containing

more than one stem are described. These constructions are divided into noun constructions and verb constructions, according to whether they are based on noun stems or verb stems. Their syntactic distribution is discussed.

The chapter on syntax treats briefly the sequence of elements within the clause, which is a defined utterance-segment. This chapter also discusses the matter of formality levels (honorifics) of the verb and of the sentence.

265 pages. \$3.31. MicA54-2057

REPRESENTATIVE AMERICAN PHONETIC ALPHABETS

(Publication No. 8738)

Samuel Christian Monson, Ph. D.
Columbia University, 1953

English spelling has occasioned many proposals for spelling reform. These proposals include methods retaining the present spelling with the addition of marks to aid in pronunciation, methods which would simplify some of the less phonetic of present spellings, and phonetic alphabets.

Phonetic alphabets are those which provide enough characters to symbolize all the phonemes of English and which use each symbol consistently for only one sound. Such alphabets may be divided into four major types.

Type 1 uses digraphs and diacritical markings to supplement the present roman alphabet. Some American examples of Type 1 are those of James Ewing (*The Columbian Alphabet*, 1798), Thomas Embree (1813), Augustin Knoflach (*Sound-English*, 1890), Judson Jones (190-?), Benn Pitman (1905), and Edward P. Foster (*Fonetik Englic*, 1915).

Type 2 uses the roman alphabet as its basis, but adds symbols so that each sound is represented by a separate letter. Some American examples are those of Benjamin Franklin (1768), William Thornton (1793), Nathaniel Storrs (1826), and Benn Pitman and Elias Longley (*The American Phonetic Alphabet*, 1847).

Type 3 discards the roman alphabet entirely and uses completely arbitrary symbols. Some American examples are those of Michael Barton (1821) and John S. Pulsifer (1848), and the Deseret Alphabet (1852).

Type 4 also discards the roman alphabet, substituting symbols which, by their forms, indicate the manner of production of each sound. Some American examples are those of William Conning (1854) and Amasa D. Sproat (1857).

Most of the above examples were merely curiosities, but two of them, the American Phonetic Alphabet (Type 2) and the Deseret Alphabet (Type 3) enjoyed unusual success. The American Phonetic Alphabet was supported by Benn Pitman, who sacrificed large sums from his earnings in shorthand publications to finance the publication of periodicals and books in his version of his brother Isaac's alphabet, used in England. The Deseret Alphabet was financed by the

Legislature of the Territory of Utah, as well as by the Church of Jesus Christ of Latter-day Saints (the Mormons).

Spelling reformers, arguing in favor of phonetic alphabets, often write that the primary purpose of writing is to signify sound, although communication is probably the primary intent of most writers. However, since English spelling is basically phonetic, it would be well to examine the feasibility of a phonetic reform.

There are three possible results of reform: individual phonetic transcription, based on individual differences of speech; individual phonemic transcription, which would transcribe the sound-types of utterances; and a standard phonemic orthography, in which a conventional spelling would be used in place of individual transcription. Of the three, the last would be most feasible, in that it would best preserve the primary purpose of communication.

The successful reformer would face not only the problems of deciding upon a standard phonemic orthography and selecting sightly, easily distinguished letter forms. He would have to convince an appreciable number of writers in all the English-speaking world that they should adopt reform and adopt his reform, or communication would become more restricted. In addition, some method of financing the change-over would have to be found. Apparently, the difficulties of phonetic reform are insurmountable.

Phonetic reform, however, has been accomplished in other times and with other languages. In each case the number of literate people was a small proportion of the population and the country in which the reform occurred was under absolute control. The English-speaking world, with universal education prevalent in most of its countries, which are ruled by governments independent of one another, does not seem to provide the conditions necessary for successful phonetic spelling reform. 206 pages. \$2.58. MicA54-2058

LANGUAGE AND LITERATURE, MODERN

THE DEVELOPMENT OF PREDICATE ADJECTIVE USAGE IN RUSSIAN LITERARY PROSE FROM PUSHKIN ON

(Publication No. 8535)

Morton Benson, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. Anthony Salys

In the introductory chapter the following questions are discussed: the genesis and meaning of the two (nominal and pronominal) adjective forms in Proto-Slavic, Old Church Slavic, and Old Russian; the two adjective forms in other Indo-European languages; the disappearance of the nominal attributive adjective

in Russian; predicate adjective usage in other contemporary Slavic languages; the use and effect of post-positive attributes and verbless sentences in Russian.

In the following chapters the recent evolution of predicate adjective usage in the nominal (short) form, pronominal (long) form, and instrumental is traced. Statistical data are utilized. As an expedient, the basic research material is broken down into three periods: the Classical Period, the Middle Period, and the Soviet Period. In the Classical Period are represented selected prose works of Pushkin, Lermontov, Gogol, Dostoevsky, Herzen, Goncharov, Turgenev, and L. Tolstoy. In the Middle Period are represented works by Saltykov-Shchedrin, Garshin, Kuprin, Gorky, Mamin-Sibiryak, and Bunin. In the Soviet Period are represented works by Furmanov, Serafimovich, Gladkov, Sholokhov, N. A. Ostrovsky, A. N. Tolstoy, Ehrenburg, Simonov, and Fadeyev.

An examination of this material shows that in the Classical Period short adjective usage was high, averaging 81%. In the Middle Period it dropped sharply to 63%. This drop reflected a stylistic variance and not a sudden innovation. The marked increase in long usage, which had taken place during the 18th century in the vernacular language, had simply not been finding full expression in the pure artistic style of the Classical authors. Long form usage rose from 12% in the Classical Period to 25% in the Middle Period, when the vernacularization of literary Russian finally became fact. Instrumental usage rose from 7% in the Classical Period to 12% in the Middle Period. These trends have continued in the Soviet Period, but have become much more gradual: short form usage dropped from 63% to 59%; long form usage rose from 25% to 28%; instrumental usage rose from 12% to 13%.

In present-day Russian the following norms appear to be valid:

The short form is usually used: when it governs a complement; when the subject is all-inclusive (in a statement expressing a general truth); when the subject is a neuter pronoun; to denote a transitory quality (but the long form is also possible); in fixed expressions; with the adverbs *tak*, *kak*, etc; with verbs in the imperative mood; when the adjective is verbalized (*rad*, *gotov*, *prav*, *dovolen*, etc.); in an elevated, rhetorical style.

The long form is usually used: when the given adjective has no short form; when the adjective is part of a petrified noun-adjective combination; in expressions describing the weather; with verbs of independent predication; when expressing the superlative; in expressions of ownership; with *takoj*, *kakoj*.

The instrumental is usually used: with verbs denoting a transition, temporary state, appearance, appellation, and simulation; with the infinitive of *byt'* (With the finite forms of this verb the nominative still prevails although in Ehrenburg's *Fall of Paris* a noticeable increase of instrumental usage is to be noted); as a predicate complement. With verbs of independent predication the use of the instrumental is at present increasing, but the nominative long form is still prevalent. 190 pages. \$2.38. MicA54-2059

THE TREATMENT OF WOMAN IN THE THEATER OF FEDERICO GARCÍA LORCA

(Publication No. 8884)

Francesca Maria Colecchia, Ph. D.
University of Pittsburgh, 1954

This is a study of García Lorca's treatment of woman in his plays, her role in his theater, and her salient characteristics. Though all of García Lorca's plays are considered in this study, it is more specifically concerned with the author's treatment of woman as seen in his trilogy: *Bodas de Sangre*, *Yerma*, and *La Casa de Bernarda Alba*. Each play is discussed separately in the light of woman's role in that play.

The general conclusions that were arrived at are:

1. Though the major role in the Lorquian theater belongs to woman, man's attitude conditions woman's behavior.
2. García Lorca sees the problems of love and sex arising from woman's efforts to adjust to man from woman's point of view.
3. Woman in García Lorca's theater is generally loyal to the man to whom she is bound.
4. A certain sensual quality is found in the Lorquian heroine.
5. A need of love is basic to the Lorquian heroine. The frustration brought about by this unfulfilled need usually results in violence and death.
6. There is an affinity for tragedy, a tragedy proneness, present in varying degree in each of the Lorquian heroines.
7. The key to the personality of the Lorquian heroine is found in an inner conflict between fantasy and reality, between what is and what she would have things be.

98 pages. \$1.23. MicA54-2060

QUELQUES ANTÉCÉDENTS D'À LA RECHERCHE DU TEMPS PERDU: TENDANCES QUI PEUVENT AVOIR CONTRIBUÉ À LA CRISTALLISATION DU ROMAN PROUSTIEN

(Publication No. 8641)

Elizabeth Czoniczer, Ph. D.
Columbia University, 1954

When around 1920 Proust began being widely known, his work seemed to stand alone and without relation to the general trend of the day.

His novel had begun being published in 1913, and although only partly written was already more or less completed in the author's mind by that time. The war which delayed its further publication also hastened the pace of the world around Proust, thus widening the gap between 1913 and 1920.

On the other hand, even in 1913 Proust was already an anachronistic figure, for beginning with his late twenties he had more and more lost contact with the outer world, while he kept elaborating the complex

of ideas, probably conceived toward 1896, around which he was to build his novel.

Thus it is not surprising that while his unquestionable originality is due to the particular brand of his genius and psychological constitution, some elements utilized in his book can be found, though in an embryonic form, in works published during the last three decades of the nineteenth century. *À la recherche du Temps perdu* seems to have crystallized under the combined influences of some philosophical, psychological and literary trends of those days.

From the philosophers and psychologists of the period Proust inherited his relativistic and subjectivistic neotic and ontological views, his kinetic rather than static conception of personality, and his interest in the subconscious, while the main idea of his novel must have been inspired by the late nineteenth century psychologists' concern with phenomena of memory in general, affective memory and paramnesia in particular, combined with the age-old literary cult of the past as reshaped by authors like Fromentin, and the vogue of sudden evocations due to insignificant sensory perceptions as described by some writers of the epoch, by Hugo, Karr, Paul Arène, Paul Margueritte, for example, and most frequently by André Theuriot.

332 pages. \$4.15. MicA54-2061

**THE SOUTH IN NORTHERN EYES, 1831-1861:
A STUDY OF ANTE-BELLUM ATTITUDES
TOWARD THE SOUTH AMONG THE MAJOR
NORTHERN MEN OF LETTERS WHO
WERE ACTIVELY WRITING ON
THE EVE OF THE CIVIL WAR**

(Publication No. 8657)

Howard Russell Floan, Ph. D.
Columbia University, 1954

This study traces an idea through the minds of the major men of letters in the North who were actively writing on the eve of the Civil War. It seeks to discover the attitude of these writers toward the South, and wherever possible, to identify an ante-bellum image of the South. In order to view this subject in relation to the larger picture of Northern opinion, it also considers the treatment of the South by some representative New England and New York periodicals, and at the same time it deals briefly in this respect with certain writers who either ante-dated this group of major men of letters or were less prominent than they as literary figures. In presenting these attitudes, the study moves from the writers of least sympathy to those of most sympathy, an organization which falls quite naturally into a spectrum showing the shadings of regional difference; for in general the enmity was found among the New England, the sympathy among the New York, writers.

The New England men of letters, for the most part, did not know the South, either through travel or through study of reliable sources. The picture of the South which can be assembled from the numerous and often scattered comments running through the

writings of Whittier, Lowell, Emerson, Thoreau, and Longfellow was essentially the image of evil which was portrayed by the abolitionists Garrison and Phillips in their fight against slavery. They were emotional and imaginative attitudes, deriving from the awesome gap between their ideals of what life ought to be and their vision of life in the South as seen through the glasses of abolitionism. Slavery was equated with instances of cruelty, privation, and wickedness, and the totality of these instances in turn was, for them, the South. In Whittier, Lowell, Longfellow, and to a lesser degree, Emerson and Thoreau, the South, slavery, and abolitionism merge and become one subject. However, a quite different portrait of the South was available to the New Englander in the *New England Magazine*, the *North American Review*, and the *Waverly Magazine*, periodicals which were sympathetic in their treatment of the South.

In their attitudes toward the South Bryant, Melville, and Whitman revealed a marked contrast to the major New England writers. They knew the South directly through travel and social connections, and knowing its variety they were without the New Englander's tendency to abstract an image which could represent it algebraically. The older generation of New York writers, Paulding, Cooper, and Irving, had also known Southern men and manners directly through personal friendship and travel, and had set a precedent for attachment and loyalty to the South. Putnam's, a leading New York periodical during the 1850s, objected to slavery without cursing the slaveholding South and in this reflected a body of opinion which constitutes the proper framework in which to consider Bryant, Melville, and Whitman. These three writers viewed America's cultural conflict from a national, rather than a regional point of view. As a journalist, Bryant presented a remarkably fair and thorough picture of the South; Melville caricatured the abolitionist's image of the South while at the same time satirizing the Southern apologists; Whitman regarded the South as an integral part of the new world, and his catalogues knew no regional boundaries. Compositely, in these three writers, one is able to view the ante-bellum South, in Bryant, comprehensively, with due regard for complexity and difference, in Melville, evaluatively, and in Whitman, sympathetically.

381 pages. \$4.76. MicA54-2062

**A PORTRAIT OF MAN IN THE NOVELS
OF GEORGES DUHAMEL**

(Publication No. 8658)

Simone Marguerite Forasté, Ph. D.
Columbia University, 1954

There is an intensely "human" note in all Duhamel's writings, and especially in his novels, which offer a portrait of man that centers on the dualism of human existence. They set themselves apart from other contemporary novels because of the very personal manner in which this image is created.

Throughout, there is evident a perpetual oscillation between the two poles of Duhamel's thinking: the pessimism of the realist, and the optimism of the moralist. It is this unusual aspect of Duhamel's novels that we have proposed to analyze in our study as a possible key to their unity.

Accordingly, the purpose of PART I (The Realist and Pessimist) is to present a Duhamel whose medical training and World War I experience particularly intensified the despairing certitude of the inexplicable mystery and disorder of the universe, and above all, the desperate unhappiness of man. Chapter I (A Sombre World) briefly shows how the main themes and episodes in the Salavin and Pasquier cycles accentuate Duhamel's pessimism. The dominant tone ranges from a quiet melancholy to an acute bitterness and despair in disillusionment and failure. In Chapter II (Instability) we discuss Duhamel's somber conception of characters, and his ideal of the incoherence of human nature. The mechanism of human thoughts and emotions appears discouragingly intricate and delicate, almost impenetrable. The smallest flaw of his complex and unstable characters seems at times magnified a hundred fold. With Chapter III (Anguish) we come to Duhamel's veritable credo, his conviction of the reality of human suffering. All his novels form a cycle of human anguish which most of his heroes incarnate in a specific way. In Chapter IV (Strife) we describe the heavy atmosphere of dissension that clouds Duhamel's visions of the family, friendship and association with co-workers. But it is in Chapter V (Dehumanization) that Duhamel appears essentially as the doctor who makes his diagnosis of the ills of mankind. The virus is the triumph of pure, technical intelligence, divested of all human elements. Lastly, with Chapter VI (Aura of Fatalism) we close Part I with one overwhelming thought: the impossibility of either understanding or changing the fatal course of the laws of nature. This best emerges from the images of the inner fatalism of passions, the immutability of human nature, the inevitability of suffering, and the spiritual anguish of most of the major characters.

On the other hand, Part II (The Moralist and Optimist) aims to introduce a Duhamel who is convinced that life itself imposes the necessity of refusing to yield to despair. A strong affirmative attitude is a duty. In our introductory Chapter I (Gleams of Light) we stress the kind of lucid, "constructive optimism," often tinged with sadness, that Duhamel adopts. It is built on the hard, cruel lessons of life itself and is a slow, patient conquest of harmony and peace over the natural disorder of things. With every major defeat there is a resurgence of courage and hope. Chapter II (Solidarity) offers a bright, warm vision both of the family and friendship, two ideals very dear to Duhamel. With Chapter III (Fraternity) we show why he has long been regarded as the novelist of human pity and brotherly love. His major characters are moved to view with compassion the frailty of human existence, and to understand the mystery of life. Chapter IV (Consolation) points to Duhamel the humanist. The individual can find in humanism not only a comfort, discipline and order but even a better comprehension

of life. Chapter V (Sublime Failure) refers specifically to the Salavin story. We explain how even here, Salavin's defeat in the end is not complete. Finally, we conclude in Chapter VI (Towards Serenity) with the strongest proof of Duhamel's optimism: the gradual moral development that he confers upon his other favorite hero, Laurent Pasquier who symbolizes the possible triumph of man over the mediocrity and misfortune of life.

Which is the final picture of Duhamel that emerges, then, from his novels? Do we see two irreconcilable Duhamels or rather a single man who has achieved a harmonious synthesis? The skillful balance of the two divergent tendencies analyzed leads one to suppose that Duhamel thus refuses to be either the confirmed pessimist or the staunch optimist, probably because he is unable to make a choice. Nevertheless, he has penetrated the very drama of human existence and confronted us with both the weakness and strength of man.

347 pages. \$4.34. MicA54-2063

THE RENAISSANCE OF HAITIAN POETRY

(Publication No. 8663)

Naomi Mills Garrett, Ph. D.
Columbia University, 1954

The birth of Haitian poetry followed closely that of the Republic. In attempting to weld the heterogeneous groups of former slaves into a nation and maintain the independence of that nation, the leaders often resorted to poetic exhortation and encomium. In verse, as in political institutions, patterns were sought in France.

During the nineteenth century and the first quarter of the twentieth, poets felt it important to refute accusations of intrinsic differences between themselves and French writers. As a result, they imitated their models too closely; their verse became a pale reflection of French Romanticism. Little cognizance was taken of the lower classes; the elite were ashamed of the primitiveness of the masses and ignored them.

The late 1920's witnessed a rebirth which caused native life to be explored without literary or social inhibitions. A group of young intellectuals undertook the task of beginning a literature that correctly represented their society. Blundering political leaders had brought on a military occupation of the country and the loss of cherished ideals. But, it was this occupation which taught the oneness of all Haitians and made the elite conscious of the underprivileged groups. This, aided by similar literary trends abroad, tended to render the poetry more Haitian, more realistic, and more human. Poets expressed reactions against an outside force which assumed the right to judge their internal affairs and to modify their attitudes.

The movement acquired impetus with the publication of Dr. Price Mars's *Ainsi parla l'oncle*, a literary landmark. The author stressed the importance of recognizing the lower classes, pointing out that their

folklore and traditions were fresh sources of subjects in revitalizing Haiti's arts.

The young writers founded a review and began to seek in their milieu and life, motives and values suitable for artistic work. They studied their African origin. Retaining French as a means of expression, they proclaimed the necessity of complete freedom from rules which had been considered infallible.

The characteristics of Renaissance poetry which differentiate it from earlier verse vary, but are based upon strong African influence, especially in theme. This poetry reveals atavistic memories and treats of the beliefs and superstitions of the Haitian masses. It emphasizes the unhappy lot of the lower classes and makes a plea for the improvement of economic and social conditions among them. It protests against injustice and exploitation. It shows pride in Haiti's past and in the black race in general.

The influence of contemporary French verse upon the techniques of this poetry is strong, but it is modified by original devices. Creole words and expressions are mixed with French to express Haitian realities and concepts. Rich and colorful metaphors are selected from the tropical scene. The rhythm of the Haitian's emotional life often replaces rhyme.

Since 1946 the poetry has become more utilitarian. It reveals more rebellion and protest, and suggests action.

On the whole, the poetry of the Renaissance marks the beginning of a trend in reflecting thought upon realities composing the collective conscience of a people. Its development is still superficial; but there is the promise that this poetry will continue to mingle with the spirit of Haiti and help that spirit express itself artistically in universal tones.

311 pages. \$3.89. MicA54-2064

ISOLATION IN THE LIFE AND WORKS OF JOSEPH CONRAD

(Publication No. 8665)

Adam Gillon, Ph. D.
Columbia University, 1954

This study is an attempt at a critical examination of isolation as a dominant motif in the life and works of Joseph Conrad.

The division into parts and chapters resulted from the study of three major groups of Conrad's isolatoes: 1) those alienated from mankind or from the community by their dream or by extreme vanity; 2) the sea-captains isolated by their command, and the outcasts of the sea and the jungle; 3) characters isolated by unpredictable circumstances or else by their own acts, which are generally in the nature of some transgression.

This division represents, in a sense, Conrad's growth as a man and as an artist. The first part is a scrutiny of Conrad, the isolato. Conrad's Polish heritage is analysed, but it is shown that his philosophy of life (to use the term in a rather loose way) was also the result of his experiences as an adventurer

and explorer, his extensive reading of English and French literature and his devotion to the art of novel-writing.

Part Two, "To Follow the Dream" is concerned with those of Conrad's characters who have been inspired by the romanticism and the disenchantments of his youth. It also reflects the influence of Polish and European romanticism on Conrad's work.

Part Three, "The Balance of Colossal Forces," is devoted to a study of Conrad's attitude to nature, particularly to the sea and to the jungle. The works discussed here are based on Conrad's experiences as a seaman and a wanderer.

The last part, "Vivendi Causae," deals with Conrad's own search for truth, which he conducts through a meticulous examination of the moral dilemma of his anguished protagonists.

This essay attempts to show that the theme of Romantic isolation is found in Polish literature of the 19th century (which Conrad knew well) and in modern literature; that Conrad's handling of his isolatoes demonstrates affinities with the romantics, the Victorians and the moderns; that, like modern writers, he is primarily engaged in a quest for the true knowledge of the self. This task reveals a few basic precepts which are not preached, but are implied in the body of his work. The chief precept is that man cannot bear moral solitude without going mad or being destroyed; and if, for one reason or another, he must follow his dream, he must also accept the punishment for his voluntary isolation.

Conrad's interpretation of life does not indicate that it is stark tragedy alone. He saw and praised virtue, especially the virtue of fidelity. His heroes almost invariably suffer or meet with a violent death, but even in their extreme state of isolation they sometimes manifest man's moral triumph in defeat and his victory over the evil in his soul. Therein lies Conrad's contribution to the understanding of human character.

221 pages. \$2.76. MicA54-2065

THE IMAGERY OF PROUST

(Publication No. 8668)

Victor Ernest Graham, Ph. D.
Columbia University, 1953

Images are an essential part of Proust's literary style. In *A la Recherche du temps perdu* one can find an average of more than one per page, and the present study is based on an examination of 4,578 examples. Of these, fifty-four per cent belong to the simile-analogy class while the remaining forty-six per cent are metaphors.

Contrary to what one might expect, sixty-nine per cent of Proust's images occur in analytical passages while only twenty-eight per cent are to be found in purely descriptive sections. About three per cent occur in conversations. Proust favors images in which both terms are concrete (seventy-two per cent), though one finds the abstract expressed in terms of

the concrete (twenty-six per cent). The concrete expressed in terms of the abstract and straight abstract images are very rare (less than one per cent).

A further classification of Proust's images also shows, surprisingly, that they are predominately visual (sixty-two per cent). Mental images account for nineteen per cent, auditory five per cent, kinaesthetic nine per cent, and synaesthetic five per cent. Olfactory and gustatory images which are stressed by Pommier account for less than one per cent of all Proust's images.

Mouton states in his book on Proust's style that the most important class of images is that drawing on the arts, but statistical analysis reveals that a large number come from nature and, in particular, the sea and water (the most important single category in the whole work). Proust draws most heavily on biology or "natural" science among scientific sources and this further emphasizes his interest in nature. Other important sources are illness and medicine, religion and the arts (especially painting and music).

Proust draws images from a variety of sources in order to try to capture elusive, many-facetted experiences. The individual theme which has associated with it the greatest number of images is that of love and jealousy.

Proust's images are welded to their context. Close examination reveals that they are often prepared for by introductory metaphors and echoed afterwards by similar textual links. Some of them depend on association of words but they are all logical despite Bret's statement to the contrary.

Many varieties of synaesthetic images are used by Proust (sounds evoke colors, scents, etc.) as well as transpositions (the sea resembles the land and *vice versa*). Other favorite techniques are to animate the inanimate and dehumanize the human. Environment and object are not separated and reciprocal images are commonly employed (girls are like flowers and flowers like girls, art is like nature and nature like art, music reminds one of natural sounds and natural sounds resemble music, etc.).

Proust's novel is a cycle and its unity is reinforced by the use of imagery drawn from common natural cycles such as that of day and night, the seasons and insects, plant and animal life.

Proust's imagery is also symbolic. Certain categories of images are easily-recognized public symbols (the sea for the eternal, the butterfly for the beautiful but transitory, etc.) but other images are not so easily apprehended. They are based largely on etymologies which play such an important part in Proust's novel. The name *Guermites* is associated with fire and the sun, and Combray with its many related themes is connected with water imagery. It is only in the last volumes that we are provided with the keys to these special aspects of Proust's use of imagery.

414 pages. \$5.18. MicA54-2066

THE POLITICS OF SAMUEL JOHNSON: AN INTRODUCTORY STUDY OF HIS POLITICAL MILIEU, ACTIVITIES, ATTITUDES, AND IDEAS

(Publication No. 8672)

Donald Johnson Greene, Ph. D.
Columbia University, 1954

The traditional view of Johnson's politics, as "blindly conservative" and "reactionary," is an offshoot of the Burke-Macaulay "Whig interpretation" of eighteenth-century British political history. Recent studies by Namier, Pares, and others, rejecting that interpretation, make it necessary to re-examine, without nineteenth-century presuppositions, the nature of Johnson's political ideas. Johnson considered himself a Tory, and the label can remain; but there is little accurate knowledge of what eighteenth-century Toryism really was. A study of Johnson's political attitudes, chiefly from his own writings, may help to define at least one kind of Toryism.

Eighteenth-century political groupings in Britain had little to do with principles and much with power. The genuine Tory Members of Parliament, the "country members," were unorganized and took little active part in national affairs. Johnson, calling himself a Tory, was thus free to act and theorize politically with great independence. Reared in Lichfield, with its memories of Puritan destruction and oppression in the Civil War, he inherited a fear of rebellion, with its concomitants, anarchy and despotism. Yet it is not true that he grew up in an atmosphere of doctrinaire reactionism. Lichfield often returned Whig members to Parliament; the evidence for his father's alleged Jacobitism is sketchy; and the tradition of his mother's family seems to have been Whig and Puritan (the Evangelical element in Johnson's religion, and its links with later Evangelical and humanitarian Toryism should be noted). Johnson's greatest intellectual stimulus in his formative years seems to have come from groups of Whig "intellectuals" - in Ashbourne, Lichfield Close, and the Stourbridge-Pedmore-Hagley neighborhood. It is more likely that Johnson's Toryism originated in reaction to the fashionable benevolism of these coteries than in nostalgia for the Stuarts. There is no evidence to support a serious charge of Jacobitism against Johnson.

Johnson's earliest writings show no trace of "authoritarianism." The preface to *A Voyage to Abyssinia* condemns oppression of native populations by zealous proselytizers; Irene states Lockean political doctrine. In the violently anti-Walpolian writings of 1738 and 1739, Johnson closely follows the radical opposition line of his friend Savage and others. But the *Parliamentary Debates* show no bias toward the opposition; indeed, Johnson explicitly defends the position of those Tories who refused to vote for the motion to remove Walpole. Possibly his observation of the actual workings of politics and of the administrations that succeeded Walpole's cured Johnson of facile "reformism." Thereafter Johnson seems always to have been more friendly toward the

Walpole-Rockingham-Fox wing of the Whigs than to their Pittite opponents.

Johnson's political writings from 1744 to 1760, especially those of the *Literary Magazine*, exhibit vigorous opposition to Pittite policies of commercial and colonial expansion, as well as a "democratic" desire for a public well-informed and thoughtful about political matters. His views on colonies are closely linked with his protectionist economic views, and in *Taxation No Tyranny* they are made to derive from a theory of national sovereignty modern in character. This, in turn, is derived, in Johnson's contributions to Chambers's *Vinerian Lectures* and in his *Sermons* 23 and 24, from a radically utilitarian theory of the state.

In sum, Johnson's Toryism, though weighted, because of his humanitarianism and fear of anarchy, on the side of a strong central government, nevertheless rests, as he himself says, on the same Lockean principles as Whiggism, except that he derives them from pragmatic considerations rather than a doctrine of natural rights. In this he is closer to the skeptical and empirical conservatism of Hobbes, Hume, and Gibbon than to modern idealist conservatism stemming from Burke and Hegel.

405 pages. \$5.06. MicA54-2067

**FERNAND CROMMELYNCK AND
MICHEL DE GHELDERODE: TWO
FARCE AUTHORS AND AN ATTEMPT
TO SITUATE AN ASPECT OF THE
CONTEMPORARY THEATER**

(Publication No. 8674)

David I. Grossvogel, Ph. D.
Columbia University, 1954

Fernand Crommelynck and Michel de Ghelderode are playwrights whose reputation and success have steadily grown during the recent post-war years, although little had hitherto been written about them. Both were born in Belgium and both have selected the Farce as the form of their plays. However, the uneasy laughter issuing from these has long blunted the insights of those critics who did attempt an analysis of their work.

Two main paths seem to lead to the core of their writing. The first affords an investigation of modern laughter as a frame for the inclusion of their writing; the second views these authors as Belgians. From the many theories of laughter propounded since Aristotle, the author has sought to develop a modified Hobbesian theory that reconciles the main definitions attempted until now with recent physiological explanations. The process of mirth thus viewed is the re-establishment of one's pre-eminence. Laughter, it is found, is born of a feeling of superiority brought on by the distance which the laughter feels towards the object of his laughter because of his non-identification with it. These feelings of superiority, distance and non-identification are those which enable the spectator to view a certain type of drama as

comical. However, the author contends that as sociological conditions changed, the spectator has tended to become increasingly a critic whose mirth is inevitably lost in the perception of causalities, since he fails to respond to superficial stimuli.

A chapter on French contemporary playwrights shows how these have attempted to meet the problem. A subsequent chapter on Belgian dramatists establishes that a caricatural vision of the world never precluded a far profounder perception for the Flemings. It is thus surmised that one may well laugh at grotesque shells while seeking identification with the living substance of those same shells. The second half of the dissertation deals at length with the work of the two main Belgian dramatists of these last years, Fernand Crommelynck and Michel de Ghelderode, and endeavors to show how their farcical treatment of a number of themes shows, in reality, a profoundly tragic view of the world. These two authors have attained the identification which Tragedy requires for its being even though their implements have been those of the Farce. The author concludes that any differentiation of genres is primarily a matter of the spectator's stance, and ultimately of his own will, rather than a decision on the part of the author or a possibility of reliance on any illusory set of rules.

The Bibliography contains a complete list of the works of the main Belgians surveyed: Herman Closson, Fernand Crommelynck, Michel de Ghelderode and Henry Soumagne.

330 pages. \$4.13. MicA54-2068

PHYSICAL SCIENCE IN NEWMAN'S THOUGHT

(Publication No. 8553)

Joseph Francis Hosey, Ph. D.
University of Pennsylvania, 1954

Supervisor: Morse Peckham

Newman showed an interest in science during his years at Oxford, particularly in mathematics, geology, mineralogy, chemistry, anatomy, and astronomy. During the years preceding the beginning of his public life, he was reluctant to admit that science presented any threat to religious belief; and, in two early public statements (the sermons on "The Philosophical Temper," 1826, and "The Powers of Nature," 1831) he expressed his conviction that there was no real conflict between the discoveries of science and the claims of religion.

Eventually, however, he found himself forced to deal with the antagonism between religion and science as an important aspect of contemporary life. He first faced the problem by emphasizing in a succession of sermons and tracts ("Mysteries in Religion," 1834; "On the Introduction of Rationalistic Principles into Revealed Religion," 1835; "Ignorance of Evil," 1836; "Faith and Experience," 1838) that reason alone can be trusted in science, but is not sufficient in religion. But his century was not receptive to this line of

thinking, and he was aware that the demand for rationality in religion was supported by the tradition of Natural Theology, which used scientific data to support religious belief. He was therefore compelled to reject Natural Theology explicitly, and to insist on the fact that science was as conducive to infidelity as to faith; and in *The Tamworth Reading Room* (1841) he attacked in detail the position that scientific education necessarily leads to moral improvement.

When he assumed the rectorship of the Catholic University of Ireland Newman set forth his ideas on the relationship between religion and science in some of the addresses published in *The Idea of a University* (1852). Here he pointed out that the antagonism between theology and science was injurious to both, and was based on the one side upon the rationalistic assumption that religious belief was a matter of opinion, and on the other upon the constant suspicion of the intentions of science on the part of religious thinkers. But he asserted that in the academic situation there could be no excuse for either of these attitudes. The professors of a university are most able, and should be most willing, to have a liberal philosophy towards truth, based upon their faith in its sovereignty and unity, and their recognition of human limitations. This effort to reconcile religion and science is basic to *The Idea of a University*, and it is clearly based not only on his famous religious insight, but upon a sympathy for science which has not been widely recognized.

Newman's use of scientific materials in his *Grammar of Assent* (1870), shows that science finally became so absorbed into his intellectual constitution that he could draw spontaneously and extensively upon it for figures of speech and examples to illustrate his ideas; and his specific references to individual scientists and their discoveries in this work indicates that his interest in science persisted throughout his life.

We may conclude that Newman's knowledge of science was extensive, if not deep; that his attitude toward it was one of great interest and sympathy, mingled with criticism of its more extravagant claims; and that this attitude played an important role in his intellectual formation and literary activity.

121 pages. \$1.51. MicA54-2069

THE "MÉTHODE LANSON"

(Publication No. 8695)

Lothar Kahn, Ph. D.
Columbia University, 1954

As an outgrowth of nineteenth century French Positivism and as a rearrangement and elaboration of existing trends in literary criticism, the "méthode Lanson" cannot be credited with complete originality. Its success may be attributed to Lanson's capable exemplifications of his methods, the ready emulation they elicited, and the general receptiveness of the early twentieth century to the scientific-historic emphasis.

Lanson's doctrine is predicated on the belief that knowing the literary antecedents as well as the historical setting of a work is requisite to understanding or judging it. Through biography, textual criticism, source and influence studies, and many other techniques, Lanson wishes to supply the critic with a solid foundation of facts upon which to build his value judgments and interpretations. Subjective reaction, inevitable because of the evocative power of great works, should not be suppressed, but limited to a response to beauty. Only that impressionism is condemned which confuses the text with one's reaction to it. Despite his faith in factual historical analysis, Lanson never believed that a work of art could be wholly explained on the basis of such study.

Lanson termed his approach the "scientific method of literary history." As he defined these terms, "scientific" referred only to an objective, unprejudiced attitude with which to study a work and not, as has been charged, to the use of laboratory techniques. "Historical" analysis was not to be undertaken for history, but as a part of it. "Method" did not mean one method, but many.

These concepts have been misinterpreted by Lanson's disciples as well as by his enemies. Many of his followers exaggerated his stress on history and minute detail and produced works which were dry, ponderous and unreadable. Their desire for total historical resurrection caused them to forget their literary sense and purpose. Though these disciples are largely responsible for whatever bad reputation the method may have today, all opposition to it cannot be attributed to them. Political conservatives, humanists, artistic and creative critics attacked the program for many reasons, but the common denominator of most objections was the fear that alien, non-literary elements were being injected into the study of letters. Before the First World War the opposition was vituperative in tone; later it was moderate and intent upon correcting the excesses of the disciples.

Despite these attacks, the "méthode Lanson" developed, between 1905 and 1930, into the dominant mode of French literary scholarship, declining only as a restless post-war generation failed to respond to its cold, rational approach.

Lanson himself had shown little enthusiasm for a scientific-historical method until the Dreyfus Case, which also marked his conversion from a skeptical conservatism to a militant liberalism. Following the Affair, his critical writings disclosed an increasing concern with historical accuracy. In other words he now vigorously supported the educational reforms of 1902. Lanson's specific contribution was the adapting of lycée literary teaching to the spirit of the reforms. He proposed an intrinsic knowledge of the text — "ce qui y est, tout ce qui y est, rien que ce qui y est" — and an appreciation of truth-seeking methods as suitable objectives for literary study in a democracy.

Lanson's program, both for the lycée and advanced research, had in common the quest for truth, the stress upon method and the desire for substance in learning.

296 pages. \$3.70. MicA54-2070

MENSCH UND VERANTWORTUNG IN DEN
ROMANEN WERNER BERGENGRUENS

(Publication No. 8790)

Gustav Adolf Konitzky, Ph. D.
Indiana University, 1954

This study, written in German, attempts to analyze the five major novels by Werner Bergengruen (1892-) under the common aspect of Responsibility. The introduction consists of a short biographical survey followed by a detailed account of the critical reception and scholarly investigation of Bergengruen's work, both in Germany and in the English-speaking countries. Chapter I, "The Writer and His Work," is devoted to an analysis of the poet's favorite concepts: temptation, decision, and responsibility.

In the following five chapters the novels are taken up in chronological order. Der Starost (1926) is interpreted as an example of the individual's responsibility to himself, private issues dominate. Bergengruen's message of the "world whole and holy" is seen adumbrated even in this early novel.

Herzog Karl der Kühne (1930) is seen as a historical novel in which responsibility in relation to the forces of history appears as the main issue. The clashes of heroism and materialism, of the knight and the mercenary, of the medieval and the modern provide the poet with ample opportunities to demonstrate the underlying forces in many colorful characters. Responsibility is glorified in the two antagonists of Charles the Bold: Rene of Lorraine and the idealized Emperor Frederic III. The outcome of the novel is that Might is not Right, and that the true Empire must always be a "Regnum Dei."

Der Grosstyrann und das Gericht (1935), Bergengruen's best known novel, is perfectly suited to illustrate the poet's concept of social responsibility. The Preamble states the leading theme of responsibility and guilt. Man is bound to succumb to temptation. Even the almost perfect ruler of the Renaissance state is not entirely free from irresponsibility. The five parts of the novel are found to correspond to different levels of responsibility.

The counterplay of fear and responsibility is the issue of Am Himmel wie auf Erden (1940). The action is projected upon the background of the little city of Berlin in the early 16th century. This, the most extensive novel of Bergengruen, combines the individual, political, and social responsibility, which were the separate themes of the three previous novels.

Responsibility and divine grace are coupled and contrasted in Das Feuerzeichen (1949). One man is so much the center of this novel that the book lacks effect; the plot and the number of characters appear meager. The theme of "the world whole and holy" is personified in three secondary characters. Divine justice supersedes human justice.

The chief endeavor of these chapters is to give, for the first time, a detailed analysis of the mental and psychological situations presented in the novels and thereby to gain some insight into Bergengruen's artistic process. An extensive survey chapter formulates the results more schematically and shows

that Bergengruen is not aesthetically but ethically determined. His very concept of responsibility is founded on a Christian world view (Protestant with Catholic overtones). This concept of responsibility extends to the poet himself, whose main task, in his own words, is "to voice the eternal order of the world." 251 pages. \$3.14. MicA54-2071

SOVIET SHAKESPEARE APPRECIATION
(1917-1952)

(Publication No. 8709)

Edgar Harold Lehrman, Ph. D.
Columbia University, 1954

Soviet Shakespeare appreciation frequently lacks depth. This is partly counterbalanced by its enormous breadth. Under the Soviet regime, Shakespeare has been popularized among entire peoples, many of whom had neither seen the plays before nor read them in their own languages.

Soviet Shakespeare appreciation has gone through many different phases. First came the 1920's, with their Rutlandism, their "vulgar sociology," and their extraordinary treatment of the plays on the stage. This apparent innovation for its own sake, as practiced by such directors as Meyerhold and Tairov, helped lead to Akimov's succès de scandale with Hamlet in 1932.

In the 1930's, the Soviet concept of humanism began to dominate Soviet Shakespeare studies. Like the "vulgar sociologists" of the 1920's, the Soviet humanists of the 1930's were interested in the political orientation of Shakespeare and his characters. The main difference between them was that "vulgar sociology" associated the playwright with one aspect or another of those social groups which Marxists consider to be the "exploiting classes," whereas the Soviet humanists associated Shakespeare with the ordinary people, the great bulk of the population.

Compared with "vulgar sociology," Soviet humanism was an improvement. Critics of the latter movement were characterized by an attention to both form and content, and by a relative absence of flag-waving and determinism. They tended to look on the "humanists" of the Renaissance - such as Shakespeare - as their own predecessors, as people groping for the way to happiness which Marx finally found. Such an approach, at least, restored the plays to their real author, destroyed the Golden Calf of Rutlandism, and encouraged production of the comedies and tragedies.

These presentations received wide publicity in the U.S.S.R., and Sergei Radlov won fame as the country's leading director of Shakespearean drama. The efforts of Soviet scholars to popularize the playwright were furthered by the special Shakespeare anniversary celebrations of 1939 and the annual Shakespeare conferences which followed (at least through 1948). During the war, Soviet Shakespeare appreciation became closely identified with the political attitude of the Soviet government. Then, for the first

time, Soviet Shakespeare criticism became an instrument of national policy. Its task was twofold: to create a bridge of cultural friendship between the Soviet Union and its Western allies, and to help bolster morale on the home front. It accomplished both purposes well.

The postwar period brought with it a temporary slackening of controls. Once again Soviet Shakespeare critics operated freely within the Soviet humanist framework. Clear signs that this was changing because of the rapid worsening of the international situation became apparent with the Communist Party resolutions and Zhdanov's speech on literature in 1946; the new policy became official with Molotov's address late the following year.

Since that time, the reins of control have become taut. After 1947, Soviet Shakespeare criticism was called upon to present a hostile picture of its Western counterpart to Soviet readers. Until the strict controls apparent at the end of 1952 are relaxed, Soviet Shakespeare appreciation may well remain in a state of suspended animation.

Meantime, it will have to rest on its past triumphs. These include Morozov's brilliant effort to interpret the plays on a basis of dialectical materialism, Mikhoels' concept of Lear as a man victimized by his own subjective and egocentric philosophy, and the enormous efforts to popularize the playwright among the Soviet peoples, particularly through the theater.

465 pages. \$5.81. MicA54-2072

LA LETTERATURA PRECETTISTICA DI
GALATEO IN FRANCIA ED IN ITALIA
SINO ALLA FINE DEL TRECENTO
(THE LITERATURE OF MANNERS IN
FRANCE AND ITALY UNTIL THE END
OF THE 14th CENTURY)

(Publication No. 8176)

Francesco Antonio Loiero, Ph. D.
Syracuse University, 1954

The regulation of social behavior has always been a part of man's daily concern. Hence the task of controlling and polishing moral as well as external acts represents one of the most important preoccupations of human civilization. Any culture inevitably displays a long list of mentors who through laws, religious precepts, proverbs, philosophical postulates or simple oral tradition voiced their opinion on the subject of behavior. The Middle Ages are no exception to this rule. In fact, this period of transition from the ancient to the modern world is one of the most active in assimilating and preserving this type of doctrine.

The present work is a survey of the rules of practical behavior which appeared in the vernacular in France and Italy during the high Middle Ages. While other studies have frequently touched upon this subject, no one has attempted to present a synthetic comparative treatment. The limits of the problem were set by three elements: 1) the classical tradition of Greco-Roman civilization; 2) the universality of the

Middle Ages under the Catholic Church; 3) the prototypes of this literature compiled in medieval Latin. These elements, however, are considered only as a point of departure.

In the vernacular treatises written between the 12th and 14th centuries, three currents emerge: the moral, the chivalric, and the bourgeois. These predominated respectively in northern France, Provence, and Italy. Nevertheless, these three tendencies are generally present in all medieval treatises on manners. An absolute distinction cannot be made, just as a distinction between ethics and esthetics never existed in the Middle Ages nor in antiquity. Practical advice and philosophical and moral concepts were given equal importance. An external act implied a moral virtue whether this virtue was the philosophical type of the Greeks or the moral virtue as interpreted by the Church. This confusion can be seen in the works of Brunetto Latini, Francesco da Barberino, Geofroy de la Tour Landry, and others. The only difference which exists between the Fathers of the Church and the secular writers in giving worldly precepts is that the former did so with an exclusively ascetic aim. They spoke to the woman as if she were "in carne sine carne," and in so doing encouraged that avalanche of misogynous literature which was so popular in the Middle Ages. Nevertheless, in time women assumed a more conspicuous role in society, and the works of Peire de Lunel, Amanieu de Sescas and Garin lo Brun of Provence give ample evidence of their refining influence upon manners.

There is, moreover, no doubt that the concept of courtesy for the Provençals and the French was synonymous with nobility. In Italy the concept changes and for the "stil novisti" the courteous man is only he who possesses a gentle heart regardless of birth.

This is the progress which can be observed as we approach the Renaissance. It was the fate of the Middle Ages not to be original: the energies of this period were used in the presentation of what was known or could be known from the books of antiquity. With the passing of every generation the material was studied, rewritten, and adapted to the intellectual faculties of those who were using it, and as it was digested and assimilated, the old chivalric order was replaced by the doctrine of the gentleman, whose actions were determined more by political than by religious or other criteria.

307 pages. \$3.84. MicA54-2073

HUME IN EIGHTEENTH-CENTURY FRANCE

(Publication No. 8734)

Paul Hugo Meyer, Ph. D.
Columbia University, 1954

Hume's personal contacts with France dated back to his stay in Rheims and La Flèche in 1734-1737, when he composed his *Treatise of Human Nature*. An important exchange of ideas with Montesquieu and a correspondence with a growing circle of admirers heralded his second visit to France in 1763-1766,

while Voltaire gave his works high praise and occasionally quoted from them.

On a diplomatic mission in Paris in 1763-1766, Hume occupied a position of some importance. His stay was distinguished mainly by the unique reception accorded him in the famous salons of the period and among the philosophes Diderot, D'Alembert, D'Holbach, and Helvétius. He also formed a lasting attachment with the Comtesse de Boufflers. His notorious conflict with Rousseau, largely the result of misconceptions about each other's temperament, found its echo in numerous pamphlets. French society and men of letters almost all sided with Hume, but later on public opinion became more hostile to him, with important repercussions upon his general reputation.

Hume's renown and the diffusion of his writings were powerfully seconded by translations of all his works except the Treatise and by numerous reviews and articles in periodicals. These, however, became less frequent and more critical of Hume towards the end of the century.

His economic writings created a considerable stir in the third quarter of the eighteenth century. Adherents of the physiocratic school profited only from aspects that did not conflict with their basic outlook, which differed sharply from Hume's. Other economists made an attempt to adapt his ideas to the economic conditions prevailing in France. Even when most of the Political Discourses were no longer considered topical, Hume's highly original refutation of the traditional theory of the decline in the world's population since ancient times exerted an important influence on the writings of Chastellux and Moheau.

Among all Hume's works, his History of England created the profoundest impression. After it had been translated in 1760-1765, no French writer dealing with that topic could afford to ignore it. Most earlier historians accepted his authority implicitly, but after 1780 a reaction set in, and numerous attacks on his views are found in the writings of political liberals like Mably, Brissot de Warville, and the younger Mirabeau. During the revolutionary period, only monarchists, such as Joseph de Maistre, accepted his interpretation. Republicans, who deplored his political bias, felt bound, however, to follow his account of the facts, above all in the description of the Stuart period.

Hume's influence on the philosophes was very limited because his theoretical investigations appeared to have little bearing on practical problems. More important were his refusal to let metaphysical considerations enter into the discussion of morals and his utilitarian approach to the latter, of which we find echoes in the writings of Helvétius, D'Holbach, and Robinet. Diderot remained outside the orbit of Hume's thought in his own writings as well as in the Encyclopédie. In the later Encyclopédie méthodique, Nalgeon paid considerable attention to certain aspects of Hume's thought.

In France, his philosophy was vigorously attacked by Catholic theologians. In Switzerland, Charles Bonnet attempted, towards the end of the century, to refute his sceptical conclusions, while the French writers of the Berlin Academy, who had initially

received Hume's theory of morals favorably, violently assailed a thinker in whom they recognized a precursor of Kant. His epistemology, considered today his most important contribution to philosophic thought, thus received scant attention until the end of the century, when his other writings had ceased to attract much interest. 494 pages. \$6.18. MicA54-2074

VALERY LARBAUD, ANGLICIST

(Publication No. 8736)

Vincent Milligan, Ph. D.
Columbia University, 1953

Valery Larbaud (1881-) is best known as a novelist, poet and essayist, but he devoted a large part of his life to studying English literature, and at several places in his published writings and in his journal refers to himself as an "Anglicist." This dissertation is principally concerned with his interest in English literature, although it also contains a few details about his life and work which are not to be found elsewhere. It is based to a large extent on unpublished documents found in his library in Vichy, as well as in Moulins and in private collections in Paris. It also makes use of many articles found in the files of little magazines and not reproduced elsewhere.

Larbaud translated five volumes of Samuel Butler's work into French, and wrote numerous articles about Butler in an effort to make him better known and appreciated on the Continent. He wrote a study of Walt Whitman which was a landmark in French criticism of that poet. His study of James Joyce's Ulysses was the first published anywhere. He was one of the first European critics to recognize the importance of William Faulkner and one of the first to discuss the work of such important authors as Coventry Patmore, William Ernest Henley, Francis Thompson, and G. K. Chesterton. He devoted years to studying the life and work of Walter Savage Landor, and although ill health prevented him from completing his book on the subject, he did what he could to attract more attention to that author's work.

Many of his English studies were gathered into a volume entitled Domaine anglais, published in 1925, revised and enlarged in 1936, and republished in 1951 as Volume III of his Complete Works. He wanted this volume to be short and well-balanced, with representative studies of English, American and Irish authors, but not too much on any one subject. As a result, he omitted a number of studies that are just as good as the ones he included, and did not show his readers the full extent of his interests and achievement in this field.

This dissertation contains twenty chapters on individual authors, in each case giving whatever information is available about the growth of Larbaud's interest in the author, his relationship with the man if a contemporary, and any change in his taste that can be observed during the period of his greatest literary

activity, from 1908 to 1935. Although there is a chapter on every author discussed in *Domaine anglais*, this work is almost entirely based on information not to be found there. The chapters are loosely arranged in chronological order, according to the dates of Larbaud's first published studies of the authors concerned, except that the chapters on English Catholic authors are grouped separately, as well as most of the chapters on American authors.

The fourteen authors discussed in *Domaine anglais* are Coventry Patmore, Samuel Butler, Thomas Hardy, Digby Dolben, William Ernest Henley, Joseph Conrad, Francis Thompson, Arnold Bennett, H. G. Wells, Edgar Allan Poe, Walt Whitman, William Faulkner, James Stephens, and James Joyce. The six other authors discussed in this dissertation are Samuel Taylor Coleridge, George Meredith, Walter Savage Landor, G. K. Chesterton, Nathaniel Hawthorne, and Henry David Thoreau.

503 pages. \$6.29. MicA54-2075

CIVIL WAR FICTION: 1890-1920

(Publication No. 8918)

Ralph C. Most, Ph. D.

University of Pennsylvania, 1951

Supervisor: Arthur H. Quinn

This dissertation is a study of the novels and short stories about the Civil War produced during the years 1890-1920. It considers this mass of fiction as an example of the literary development of the historical novel during these thirty years, and justifies the historical novel for the service it renders the general reader in presenting historical events vividly and with the emotional intensity that the detachment of history often lacks. The study of this fiction also observes the attitude of mind toward the Civil War that the struggle produced in generations of thinking people who succeeded the war, as well as the feelings of the people about war in general. The period 1890-1920 was chosen because earlier periods have already been adequately dealt with; because by 1890 sectional animosities had largely abated, and something like a disinterested approach to the problems of the war might be expected; and finally because the '90's represented a great revival of the historical romance, including many works about the conflict, and also witnessed a nascent realism which grew and flourished as the period progressed.

The study indicates that Civil War fiction followed the development of American fiction in general. During the '90's, superficial writers, attracted by the apparently easy topic of war, produced many novels marred by romantic and idealistic excesses. Gradually, however, the growing realism of literature in general affected the Civil War novels, which became more mature and true-to-life in plot, character, and setting, though many writers, by experimenting with indirection, spoiled otherwise good novels. The study next considers the influence of convention upon the

structure of the Civil War novel, and notes the conventions of plot, character, and setting, and the conventional attitudes of mind which produced these stereotypes. Along with the dominant conventional patterns, the dissertation considers the occasional departures from convention and attempts to account for this distinctly minority report. Then the Civil War short stories of the period are investigated and are found to be complementary to the novels, filling in the details of the picture of war, and in general achieving a higher artistic quality than the novels because the episodic nature of war admirably fits it for interpretation through the short story form.

The dissertation next considers the artistic quality of the Civil War novels. Though there are a few artistic triumphs, the general level rarely surpasses respectable mediocrity, for the nature of war attracted less competent writers who relied on adventure and excitement to hold readers, and repelled many of the more serious and accomplished writers, who were unable to recognize the importance and significance of war as a national and world problem, or held an artistic theory which for them excluded war as literary material. Finally, war as a subject for fiction is considered. It is material of increasing importance as war becomes increasingly the normal human environment, and therefore attracts the attention of better writers. Personal experience of war on the part of the author is judged to be of aid in writing war fiction, but experience is not enough, and must be tempered by artistic insight and imagination.

278 pages. \$3.48. MicA54-2076

LA NOVELA REALISTA MEXICANA

(Publication No. 8742)

Joaquina Navarro, Ph. D.

Columbia University, 1954

It has been frequently stated that Mexican life and problems have not been adequately reflected by the novel until the novel of the Revolution was written. This study is an attempt to analyze the character and literary values of the Mexican novel of the period corresponding to Porfirio Diaz's Dictatorship (1880-1910) in Mexico, and its contribution to a literary view of the political and social features of the time.

The Introduction deals with some ideological currents that dominate the epoch; positivism in education and the influence of capitalism in government are the dominant factors; in literature, the realistic "novela costumbrista" is abandoned in favor of a novel that seeks to analyze society in the manner of the more modern European realistic novelists.

Each one of the four representative novelists of the period - Emilio Rabasa, Rafael Delgado, Jose López-Portillo y Rojas y Federico Gamboa - is studied in a separate chapter together with his most important followers.

Rabasa's acute sense of humour and dynamic interest in sociology are reflected in his works through a lively schematic art in which characters, action and

linguistic expression are effectively integrated to present the chaotic existence of society under corrupt government. Rabasa's followers enlarge on one or more aspects of his novels; each author consciously using his own style in order to give further directness and realism to his impressions.

The world of Delgado's novels is, on the contrary, the sedate life far from the capital and its political ambitions. Characters and problems reflects Delgado's concern for more general and eternal human evils than those found in Rabasa's work. The author's poetic sensitivity and artistic language fill the novels with lyrical descriptions of provincial life.

López-Portillo on the other hand takes up the defense of traditional life in his novels. The anticlerical provisions of the Reforma movement, the positivistic philosophy in education and the problems of rural life are this author's main topics. López-Portillo's faith in traditional Hispanic beliefs resemble in intensity those of the Spanish novelists José María de Pereda, but lacks the latter's violent intolerance. López-Portillo's academic style and detailed construction of characters and situations lend dignity and force to his social ideas. He had several imitators. His followers carry on his defense of a traditional social organization, but they offer a variety of degrees in the artistic reflection of provincial characters and Mexican scenery.

Federico Gamboa adds his realistic pictures of Mexico City's miseries and urban vices to those aspects of Mexican life treated by Rabasa, Delgado, and López-Portillo. But Gamboa's technique does not have the humour, nor the poetry, nor the dignity of his three contemporaries. Gamboa's literary works introduce in the Mexican realistic novel a romantic plea for human pity towards the pariah in modern society. The heroes that Gamboa selects for his novels represent well, in their extreme moral and emotional confusion, the uneven levels of artistic achievement accomplished by their creator. Gamboa's artistic expression and feeling of reality reach their best form when he describes the psychological impact of the monster-city on some characters and scenes of his books.

The Mexican realistic novelists are a homogeneous group. Their novels are a faithful reflection of the profound ideological and economic changes that were taking place within the leading groups of Mexican society. The conflicts, characters, and environment treated in the realistic novel are of no less value to the literary history of Mexican life than are the problems and types presented by the novel of the Revolution a few years later.

353 pages. \$4.41. MicA54-2077

THE DON JUAN THEME IN THE TWENTIETH CENTURY

(Publication No. 8747)

Martin Nozick, Ph. D.
Columbia University, 1953

The primary objective of this dissertation is to bring Georges Gendarme de Bévotte's book *La Légende de Don Juan* up to date. This two-volume scholarly work traces the evolution of the Don Juan theme in literature from Tirso de Molina's *El Burlador de Sevilla*, published in 1630, to the beginning of the twentieth century. The Spanish friar's idea was to depict a profligate who because he did not heed his valet's warnings to repent of his sins in time, was pulled down to Hell by a supernatural agent – the statue of the Comendador – before he could make confession. The story found its way to Italy and then to France where it became the *Festin de Pierre* of Molière. In the eighteenth century it was treated by Lorenzo da Ponte and Mozart, by Goldoni and other minor writers.

But it is in the nineteenth century that the theme receives some of its most interesting re-interpretations. Some writers start a new trend by explaining Don Juan's dissoluteness as the reaction of a man who seeks the impossible and becomes bitter with failure (Hoffmann, Musset, Flaubert). Don Juan is identified with Faust (Grabbe, Lenau), and with Prometheus who defied the gods (Baudelaire). This defense of Don Juan continues into the twentieth century. To the poet Claude Henri Fresch, Don Juan is an idealist whose true aims are misunderstood. For Harry Kemp, Don Juan is a seducer because women lend themselves too easily to seduction. To Francisco Villasespa, Don Juan is the reaction against artificial or monastic standards of chastity imposed upon the opposite sex. To Henri de Régnier, Manuel da Silva Galo and Menotti del Picchia, Don Juan incarnates a pre-cogitating force, an untrammelled *élan vital*, and therefore cannot be judged from the point of view of expediency or prudence. According to Jacinto Grau, when Don Juan fulfills himself, he also fulfills the secret desire for release and variety which so many women harbor. Enrique Larreta and James Elroy Flecker make of Don Juan a champion of political liberty, while the Quintero brothers depict him as essentially a "good soul." And for Shaw, Don Juan is not Don Juan at all, but the quarry of Doña Juana.

The nineteenth century made another contribution to the theme by fusing the story of the conversion of Don Miguel de Mañara with the Don Juan legend. This was the work of Dumas père, Mérimée and Zorrilla primarily. Following in their wake, writers in our century have produced a body of literature in which Don Juan (or Don Miguel) is not condemned to Hell, but is saved either through a sudden change of heart or the influence of a good woman. This general pattern is to be found in the plays of Edmond Haraucourt, Joaquín Dicenta, Arnold Bennett, Antonio and Manuel Machado, Jean Suberville, Oscar Milosz, Gregorio Martínez Sierra, and in the novels of Albert T'Serstevens and Joseph Deltell.

But the damnation originally associated with Don Juan is not forgotten, although in the twentieth century he meets his end naturally; he becomes old, decrepit, or realizes that he is something anachronistic, superannuated, ridiculous. Henri Lavedan, Mounet-Sully, Otto Anthes, Luca de Tena depict an aging or aged Don Juan; Rittner a half-mad roué; and with Henri Bataille, Don Juan suffers the humiliation of having to buy love. Some writers, however, are satisfied with nothing less than destroying the Don Juan legend; Edmond Rostand, Unamuno and Lenormand try to prove that Don Juan is not a great lover but rather a disguised defective.

And in the twentieth century many essayists – psychologists, moralists and sociologists – treat Don Juan out of literary context, as an abstraction. Marañón accuses him of being a case of arrested sexual development, perhaps even an unconscious homosexual; Unamuno claims that Don Juan is less than a man since he leaves nothing tangible after him, no children, no contribution to society; Oliver Brachfeld says that Don Juan is a victim of an inferiority complex; and Otto Rank sees him as the victim of an Oedipus complex. Ortega y Gasset, on the other hand, defends Don Juan as a superman in a world where the standards are set by the masses; Camus holds him up as the existentialist *homme absurde*. Others hail Don Juan as a great *conquistador* – not a deceiver – of women, as the outstanding symbol of a basic urge common to all of us, as a challenger of meager bourgeois codes.

The final chapter of the dissertation discusses modern works concerned with Don Juan's effect upon his children, servants and friends, and ends with Guillaume Apollinaire's summary of the classical Don Juan stories – those of Spain (Tirso and Zorrilla), France (Molière and Mérimée) and England (Byron). 310 pages. \$3.88. MicA54-2078

A CRITICAL STUDY OF THE POETRY OF ROBERT PETER TRISTRAM COFFIN

(Publication No. 8571)

Hugh Pendexter, III, Ph. D.
University of Pennsylvania, 1954

Supervisor: Thomas P. Haviland

The purpose of this dissertation is to determine what sort of poet Coffin is and what has been his chief contribution to American literature. The dissertation consists of (1) a biographical sketch, (2) a study of Coffin's subject-matter, (3) a study of his themes, (4) a study of his style, (5) a chronological study of his published volumes, seeking a pattern of development, and (6) a consideration of his long, unpublished narrative, *V. I. P.* Because it has seemed wise to work primarily with the poetry, there has been no attempt to write a comprehensive biography or to study thoroughly Coffin's prose works. These prose writings have been used only where they illustrate the

themes which Coffin develops in his poetry or throw some light upon his style or subject matter. In the same way, biographical information has been used only where it clarifies some phase of his development as a poet.

An analysis of Coffin's themes is the most important phase of the study of his poetry. Deliberately limited in his subject matter, a facile rather than a painstaking craftsman, Coffin has chosen to stand or fall as a poet on the basis of his themes. In an age which emphasizes the importance of the stylist, Coffin has chosen to stand primarily on his manipulation of ideas. It is obvious that he is a local, rural poet, but this is not the most important fact about his work. Coffin is basically a religious poet, and it is only as religious poetry that we can understand his work as a whole. Farms and ocean, woodlands and ledges, are but the framework within which he expresses his religious experience, his search for holiness, security, and permanence.

This religious experience is neither mystical nor spiritual, and its expression is neither dogmatic nor theological. He begins, not with a single exalting religious experience, not with an all-illuminating spiritual revelation, not with a clear-cut body of theological doctrine, but with a profound sense of human need. Bound to the earth and bounded by human experience, he yearns and reaches in all directions, seeking a fundamental law which can reduce the chaos of his observation and experience to some kind of order. Coffin's poetry is a monument to his faith that there is a fundamental order in the universe; it is a record of his search rather than a summary of findings. It is a chronicle of questions rather than a catalog of answers.

Coffin is not the representative of a church, nor does he fancy himself God's representative. Quite to the contrary, he is the representative of man seeking God. He represents the open-eyed wonder of a newly-created man placed without explanation on a newly-created earth. Eagerly he sees, hears, feels, smells, and tastes everything that comes to his notice. Because he has no other basis for his investigation than his own sense experience, he tries on this basis to induce the Creator.

Coffin's primary purpose is to share with ordinary people the light which his poetic imagination can throw upon everyday living. The fact that people without scholarly training read and enjoy his poetry indicates that Coffin has succeeded not only in expressing his sense of beauty, but also in sharing it.

244 pages. \$3.05. MicA54-2079

AMERICAN LITERATURE AND THE GREAT DEPRESSION

(Publication No. 8572)

John A. Penrod, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. E. Sculley Bradley

The severe impact and long-lasting effects of the American Depression of 1929-1941 are reflected fully and realistically in the novels, plays, and poems of the same period. Writers reacted quickly to the physical and psychological suffering caused by the economic breakdown in the big city, the small town, and the country. The ordinary citizen – the Common Man – became a prominent figure in the literature of the times, and the unemployed, the reliefer, and the migrant were fully represented. The effects of the Depression upon business and industry, and upon white-collar and industrial workers, likewise form a large portion of the literary subject material. Many writers expressed highly critical views of the economic system as a whole, regarding it as a powerful but inefficient machine, a senseless, cruel, and humanly wasteful mechanism. Changing attitudes and behavior in the realm of manners and morals were also reflected by the literature of the Thirties, and the demoralizing effect of the Depression upon family life was similarly reported. The problems of racial and minority groups, complicated by economic stress, received sympathetic treatment by both Negro and white writers, whose efforts undoubtedly helped to lessen prejudice against Negroes and to warn against an increasing anti-Semitism. Finally, the American political scene, the New Deal, and the federal work projects, together with the fear of fascism and the threat of war, became a major concern of novelists, playwrights, and poets.

These aspects of the Depression were reflected by American literature as a whole, not simply by a group or school of writers, proletarian or otherwise. The majority of writers reacted specifically to the economic crisis. They reported realistically on most phases of American life during the period, but they were particularly interested in what was happening to the masses of the citizenry. Their work showed clearly that economic reform was urgently needed, especially on behalf of the common people, the workingman and the farmer. They voiced the opinion that these people had economic rights, as well as political ones, and they insisted that this meant not only such things as the right of labor to organize, but also the fundamental right of every citizen to have a job and a decent livelihood. By and large, they did not advocate a complete overthrow of the economic system, but they were almost unanimous in their strong criticism of the indifference and injustice of the old capitalism. If many writers were attracted by the Russian experiment, an attraction which began to wane after the middle of the decade, the great majority of them felt that America was still the chief hope of democracy in a stormy and fearful world. They raised insistent warnings

against the menace of fascism, both foreign and domestic, and they pointed out that the best defense against such threats – as well as against the threat of economic injustice – was a new kind of democracy, one which was broadened and humanized, and which affirmed once more, in stronger terms, the inherent dignity and worth of all men.

290 pages. \$3.63. MicA54-2080

SYNCOPE AND LIKE PHENOMENA IN ITALIAN

(Publication No. 8760)

Richard McMahon Powell, Ph. D.
Columbia University, 1954

Information on syncope in the Romance Languages is confined to generalized statements contained in phonological surveys of the languages in question. Few details are known of the process of syncope – particularly of Italian, which shows a rather inconsistent picture in this respect.

There appears to have been no regional differences in Vulgar Latin in the matter of syncope up to the time of the formation of the various Romance Languages. However, the development of a strong stress accent set the stage for a general syncopation of unstressed vowels throughout Romance territory. The most plausible explanation for the phenomenon of syncope is that there was a general fall of all unaccented vowels, except for the initial and final ones. In Italian, especially, a learned and conservative trend caused many long forms to return.

One of the most difficult decisions for Italian is the classification of learned and popular words. Phonetic criteria form the principal basis of judgment, with other aids, such as social level and technical use, brought in when applicable.

Basic forms are presented which can be traced back to their Latin etyma. Derivatives are eliminated insofar as possible.

The present state of the problem offers no explanation for the existence of syncopated forms in some cases and not in others. The only reason presented is that the surrounding consonants were responsible for syncope. However, various theories are discussed for the state of syncope in Italian. The East-West division of Romania is hardly acceptable, since too many exceptions are seen.

The statistical method is used for the presentation of this thesis. Several special types of syllable reduction are first given. The development of yod is very active in Italian, but it does not contribute to the essential character of syncope. Another special type of syllable loss, the fall of initial syllable, is rather extensive in Italian. Apheresis accounts for the major part. In addition, the fall of the initial vowel of the prefix *ex-* was extended by false correction and by confusion of prefix. Of minor importance is the final syllable, which remains practically intact in Italian.

Syncope proper is considered under two main headings – proparoxytones and paroxytones. There are separate lists for popular, learned, and borrowed

words. Statistics are given for each division. To provide a control of the material found in lexicons, a separate study is made of dialects, based on the linguistic atlas. The dialects confirm the existence of many syncopated forms alongside non-syncopated forms. We thus see possible dialect influence on standard Italian; many doublet forms still remain in the standard language. There is also a check added in the study of the 13th and 14th century vocabularies of Dante and Petrarch.

The most important conclusions of the thesis are as follows. The amount of syncope in Italian, taking all types together, is twenty-five per cent when learned and borrowed forms are excluded. With the inclusion of popular, learned, and borrowed forms, the percentage drops to ten per cent. However, the former figure is the more valid, since the latter includes words added after the active period of syncope in Italian.

The reason for syncope in some cases and not in others cannot be completely solved. Three general conclusions follow. Post-tonic syncope occurs more readily than pretonic syncope. The longer a word, the more likely that syncope will occur. The consonants surrounding the vowel in question seemed to be important. Syncope took place more frequently with liquid consonants surrounding the vowel, and with the vowels *i* and *u*. 275 pages. \$3.44. MicA54-2081

MALLARMÉ IN ITALY: A STUDY IN LITERARY INFLUENCE AND CRITICAL RESPONSE

(Publication No. 8764)

Olga Maria Ragusa, Ph. D.
Columbia University, 1954

The Italian critic Walter Binni has said that Mallarmé is not only fundamental for a full understanding of integral Symbolism, but that he is also the chief French influence on the whole of European Decadentism. Mallarmé has since 1885 been the object of much explicative and apologetic critical literature, but the nature of his influence, either in his own country or abroad, has never been studied in detail. In isolating the high points in the development of Mallarmé's literary fortune in France, a convenient frame of reference for subsequent research on related topics is provided.

This survey of the history of "Mallarmé après Mallarmé" in France is followed by a consideration of the problems involved in the transfer of the difficult poet's message to Italy. In Italy, whose literary development reflects to such a large extent developments in other European countries, but which has at the same time been somewhat outside these trends, or has at least felt them with a certain delay, Mallarmé's fortune may be said to have gone through three distinct stages. The first period, which goes from 1886 – when we find the French poet mentioned for the first time in literary journals – to the turn of the century, is a period of "presentation." The poet

and his work is introduced to the Italian public against the general background of Symbolism, a foreign literary innovation which is eliciting much interest and curiosity. In this period the most common representation of Mallarmé is that of *poète maudit*. In contrast to this attitude are Vittorio Pica's articles, later collected in a volume *Letteratura d'eccezione*. In 1887 Wyzewa called Pica's Mallarmé study the only serious and intelligent appreciation of the French poet's efforts made up to that time, and Remy de Gourmont described it further as "un chef d'oeuvre de mise au point et de mise en lumière." In general French critical opinion of Mallarmé was well represented and reproduced in Italy during this period. On the other hand, references in periodical literature between 1886 and 1900 show that after the first flush of discovery, Mallarmé's name returned to obscurity and only at the time of his death was there a temporary resurgence of interest.

The second period of Italian interest in Mallarmé is in part based on this foundation, but is to a greater extent the result of the renewed impulse of a direct French influence: the publication of Thibaudet's *La Poésie de Stéphane Mallarmé* and the emergence of the movement of *poésie pure*. The period is dominated by an intimate collaboration between internal – Italian – transformations and foreign importations. Deepened understanding of the Symbolists and of Leopardi go hand in hand. Futurist interest in Mallarmé is superficial, though certain of Mallarmé's techniques bear an apparent similarity to Marinetti's typographical innovations and to the poetics of Futurism. The *Voce*, however, incorporated the theories of the French poet into its own practise of literary criticism and into the early work of Onofri.

The third period which goes from 1920 to 1940 represents the final elaboration of Mallarmé's doctrines by the so-called Hermetic poets. It is with Hermeticism as a whole, rather than with any one of the poets individually, that the name of Mallarmé has now come to be associated. The Hermetic poets translated into their own terms the essence of Symbolist doctrine and sought after that elusive essential root of poetry which can often be attained only by the complete erasure or "erosion" of the written word. In their esthetic doctrine and to a lesser degree in their poetic output we have the ultimate, complex results to which a prolonged and repeated contact with Mallarmé has given rise.

An Appendix contains a detailed listing of all Mallarmé translations into Italian.

314 pages. \$3.93. MicA54-2082

A CRITICAL EDITION OF ARVIRAGUS AND
PHILICIA BY LODOWICK CARLELL: WITH AN
ACCOUNT OF THE AUTHOR'S LIFE AND PLAYS

(Publication No. 8575)

James E. Ruoff, Ph. D.
University of Pennsylvania, 1954

Supervisor: Matthew W. Black

The introductory material of this edition of Carlell's Arviragus and Philicia is divided into three main parts: a brief biography of the playwright, a critical study of his plays together with a discussion of his relation to Henrietta Maria's Platonic love coterie, and an introduction to Arviragus and Philicia with special consideration of the textual problems presented by the printed edition of 1639 and two early manuscripts. The biography contains considerable material that is not in Charles H. Gray's Lodowick Carlell, a University of Chicago dissertation published in 1905. New information is disclosed about Carlell's family, and especially about his father "Hobbie," or Robert, Carlell of Brydekirk, who, it is suggested, was the author of the poem Britain's Glories (1619). In addition, Carlell's name is linked with the Platonic love cult at the Stuart court, records are cited to show that Carlell enjoyed more prestige as a dramatist at court during the period 1629-1642 than has been acknowledged, and Carlell's known circle of acquaintances is widened to include Thomas Killigrew, Thomas Carey, Mary, Duchess of Richmond and Lennox, Lucy Hay, Countess of Carlisle, Algernon Percy, the tenth Earl of Northumberland, and Thomas Dekker, who solicited Carlell in 1631 to have Match Me in London performed at court. Two fugitive poems by Carlell are printed for the first time since the seventeenth century, a dedicatory poem appended to the second edition of Sir Samuel Tuke's Adventures of Five Hours (1663), and "On Pandora," prefixed to the first edition of Sir William Killigrew's Four New Plays (1666). Two new prologues to Arviragus and Philicia, one of them by Dryden, and an anonymous satire on the Passionate Lovers in the third edition of Alexander Brome's Songs and Other Poems (1668) testify to a continuing interest in Carlell's plays during the Restoration period.

The second, or critical, portion takes up the sources, dates of composition, and plots of Carlell's plays and those of his contemporaries at court is also demonstrated. Emphasis is laid on the fact that no effort was made to express an intellectual philosophy of Platonism, but that verbal tribute was paid to certain esoteric social conventions introduced by the Queen. In the discussion of Arviragus and Philicia as a type, it is shown that Carlell's play reveals some of the characteristics of Beaumont and Fletcher's tragicomedies and of Dryden's heroic plays without entirely conforming to either of these genres. Carlell's Arviragus and Philicia is described as a "Cavalier romance," a transition play that joins the tragicomedies of Beaumont and Fletcher with the heroic drama of the Restoration.

The present edition of Arviragus and Philicia is

based upon a collation of the printed edition of 1639 with two early manuscripts, a manuscript copy in the archives of the late Lord Leconfield at Petworth House, Sussex, and a manuscript quarto in the Rawlinson collection of the Bodleian Library at Oxford. The existence of the Petworth manuscript has not been generally known. In "Elizabethan and Seventeenth Century Play Manuscripts," PMLA, L (1935), 689, Harbage described the Rawlinson copy as the only extant manuscript. In view of the absence of external evidence, no attempt is made to date the Petworth and Rawlinson manuscripts. An analysis of the extant texts indicates that the printed edition and the Petworth manuscript were based upon a common source, possibly a scribal copy containing misreadings and omissions, and that the Rawlinson manuscript was made by two professional scribes as a presentation copy to the tenth Earl of Northumberland. A collation of the manuscripts has enabled the editor to restore several omitted passages and to correct a large number of errors in the printed edition.

563 pages. \$7.04. MicA54-2083

THE INFLUENCE OF CHRÉTIEN DE TROYES
ON JEHAN'S LES MERVELLES DE RIGOMER

(Publication No. 8576)

Theodore Hanna Rupp, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. William J. Roach

Jehan, the otherwise unknown author of the long (17271 verses) thirteenth-century Arthurian metrical romance, Les Merveilles de Rigomer, owes the greater part of his work to Chrétien de Troyes.

Of the five Arthurian romances of Chrétien, Jehan borrows extensively from Perceval, Erec et Enide, and Yvain, considerably less from Chrétien's Lancelot, and very little from Cligés. Jehan fails to utilize these last two romances chiefly because of their incompatibility (as a result of their love themes) with the poet's plans for a romance of pure adventure.

Perceval is first in importance, not only because it contributes the majority of its principal scenes, but also because it is from Perceval that Jehan derives the basic element of Rigomer: the liberation by a flawless knight (Gawain) of a castle and its occupants from a magic spell. Erec is second in importance, mainly because the adventure of the Joie de la Cort supplements Perceval in inspiring the basis for some of the adventures associated with the mervelles of Rigomer. Contributions from Erec, moreover, form a larger proportion of the content of Rigomer than the other two, principally because Jehan uses his sources a second or a third time, somewhat modifying the details each time. Examples are Chrétien's row of heads impaled on stakes, utilized by Jehan twice; the abduction of the girl's lover in Erec, utilized three times; Erec's encounter with the three robbers, utilized twice; and that hero's encounter with five robbers, also utilized twice. From Yvain,

Rigomer borrowed almost all its important elements – such as, the acceptance by a widow of her husband's slayer, the madness of the hero, a magic ointment, recognition by a scar, rescue of the castle and the master's daughter from the rapacious giant, Lunete's trial by combat, the disinherited sister, etc. From Lancelot come the motif of the boon associated with Kay, the magic ring, Lancelot's imprisonment, the hint of Lancelot's affair with Guenevere (as the basis of her quarrel with Arthur in the "Schlussepisode"), the various peculiar bridges, and the public reviling of Lancelot. Cligés furnishes the idea of Cligés as the hero of a cemetery adventure and the crowd of women subduing Gawain.

Not only did Jehan appropriate episodes but also characterizations, characters themselves, animals, objects, natural settings, physical phenomena, magical devices, and a miscellany of descriptive features. The ugly herdsman in Yvain furnishes details of description for two different characters in Rigomer. The storm aroused at the Perilous Spring serves Jehan three times. The roncin left for Gawain in Perceval provides Lancelot's roncin in Rigomer. The enchanted arbalests protecting the Castle of Ladies protect a bridge at Rigomer. Erec's rescue of Enide following her forced marriage to a stranger is reflected in Engrevain's rescue of Robert's wife after her forced marriage to a stranger.

Jehan displays a certain degree of skill in modifying and transforming his données, but not enough to overcome the romance's chief weaknesses: mediocrity and prolixity. Whether or not the disguise represents an intentional effort to conceal the source or whether it is simply a means of utilizing the source on two or more different occasions cannot be decided definitely. In any case, the disguise is not difficult to penetrate when the multiple episodes are collected and compared in their ensemble with the model and when various superficialities are removed. In Perceval, Erec, and Yvain, Jehan's imitations even extend to Chrétien's phraseology, so that arrangement of similar passages in parallel columns reveals a remarkable degree of verbal correspondence.

Though Chrétien serves as Jehan's principal source, there is sufficient material still unaccounted for to warrant further research on the origins of Rigomer. Hints can be found in the writings of Gaston Paris, Stengel, Foerster, Breuer, Bruce, and Loomis. Where correspondences with Rigomer are found in romances of the early part of the thirteenth century, the researcher should first look for a common source in Chrétien on the basis of the evidence presented in this study. In addition, further work needs to be done on assigning a more precise date to Rigomer. It is possible that a relationship can be established between Rigomer and the prose Lancelot which might aid scholars in resolving the question of a date.

182 pages. \$2.28. MicA54-2084

THE FORMS AND THE FUNCTION OF THE
FAMILY IN GOETHE'S CAMPAGNE IN
FRANKREICH AND BELAGERUNG VON MAINZ

(Publication No. 8586)

Alfred Gilbert Steer, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor Jockers

The Campagne-Belagerung has never been satisfactorily interpreted as yet, chiefly because the biographical, historical and stylistic methods employed were unable to do justice to the organically inherent social thinking. Recently, scholars have learned to apply the morphological methods which Goethe developed in his scientific studies to the literary productions of his classical and post-classical periods. The present investigation is based on Goethe's assumption that nature, art and society form one trinity, governed by the law of polarity and guided by the principle of type formation. Individual phenomena are merely transitory metamorphoses of a basic underlying "Urform." In human society, Goethe came to see the family as the archetype of human association, and the "Volk" as the most important of the infinite metamorphoses thereof.

The French Revolution was the negative impetus to this social analysis, for the Campagne-Belagerung is a part of Goethe's effort to save the German "family" from infection and eventual destruction by the seductive revolutionary ideas. In so doing, Goethe had to use great care, for, as a responsible minister of the Weimar government, his words might have been misconstrued. Thus he had to write on two levels of meaning, as if his work were a cryptogram, the deeper and more meaningful level of which, his philosophy of the family, reveals itself only to painstaking analysis.

The first portion of the Campagne shows the allied armies, and the states which they represented, as failures, because they lacked the organic construction of families. In the French people Goethe recognizes an coherent national group such as he had seen in Rome, but which he had vainly sought in Germany. In this connection the Roman monument at Igel reveals deep symbolic meaning. In the general disintegration it stands out, showing that cooperation is the final meaning of life, that life organized in and for the purpose of a group (family) is the only thing that can triumph over chaos and destruction. In his account of the Igel monument, as elsewhere in the Campagne, Goethe took revealing liberties, which can be explained only as conscious attempts to make historical facts fit his sociological purposes.

The "Zwischenrede" is the bridge between Goethe's military experiences and his later search for the seeds of a "Volkheit" in Germany. He was bitterly disappointed. The Jacobi circle was too devoted to French rationalistic and mechanistic philosophy, while Plessing was completely absorbed in the "English sickness" of immoderate sentimentality without the saving grace of British humor, and lastly the Galitzins were so otherworldly that they had largely lost real contact with this world.

In Weimar Goethe cautiously tried to overcome the German self-isolation, first by teaching the actors to cooperate, then by showing his "Weimarische Kunstfreunde" the way to higher achievements by united action towards common goals. Lastly he appealed to the German people in his "Revolutionsdichtungen" to forget their disputes, crush the barriers of social caste and fuse the creative elements of the people into one "Volk."

The *Belagerung* represents a "Steigerung" of the military portions of the *Campagne*, and the meeting with Schlosser is the climax of Goethe's unsuccessful search for a seed-bed of "Volkheit" in Germany, for Schlosser harshly scorned Goethe as naive for believing that any unselfish association was possible among Germans, thus branding his search as doomed to failure. The work ends on the melancholy note of looking forward to the complete German collapse of 1806.

Thus the *Campagne-Belagerung* was a call to action, for it warned society to return to its fundamental principle, the family, and to maintain that principle's integrity against any attack. This social thinking forms the very heart of the work.

315 pages. \$3.94. MicA54-2085

**THE SECOND MAIDEN'S TRAGEDY:
A MODERNIZED EDITION WITH
AN INTRODUCTION**

(Publication No. 8587)

Harold L. Stenger, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: Professor M. A. Shaaber

This modernized edition of *The Second Maiden's Tragedy* attempts to create an authoritative reading version of the play as close as possible to the author's original dramatic product. By correcting the numerous errors which have marred all previous modernizations, by reestablishing the integrity of the poet's metrical lines, and by restoring material excised by the censor and by the playhouse cutter, it seeks to bring into being an exact twentieth-century counterpart of the playwright's conception.

The introduction, in its four parts, treats the following aspects of the play:

I. The manuscript. A remnant of John Warburton's once extensive collection, this manuscript commands special attention as a specimen of prompt copy or "book of the play." Certainly the work of a scribe, its pages throw a revealing light upon the handling of copy by the scrivener and, in their interlinear literary corrections and prompter's notes, upon the work of other playhouse functionaries. The manuscript is

even more important, however, as a record of Jacobean censorship. The excisions and deletions, some of them in Buc's own hand, present invaluable evidence of the rigor of the censor's ban upon oaths and subversive material. Phrases of aspersion upon court or courtier or lines in the remotest way inimical to the monarchy are deleted with a ruthless disregard for literary or dramatic values. In addition, in unique passages inserted on separate slips of paper by the author and in marginal annotations and deletions made in the playhouse, the manuscript helps to illustrate Jacobean methods of preparing a text for the stage.

II. Sources. Analogues to the main plot are presented from the legendary history of Ines de Castro and Don Pedro of Portugal, and from the Herod-Mariamne and the Charlemagne-Fastrada legends. The playwright's long-recognized debt in the subplot to Cervantes' story of "The Curious-Impertinent" is examined in some detail.

III. Authorship. A primary concern of the introduction is to establish the play as Thomas Middleton's. After an historical resumé of the ascriptions of authorship from the late seventeenth century to the present time, this section assays the cases for the principal claimants - Chapman, Massinger, Tourneur, and Middleton. Although Middleton's claim, in the present state of our historical knowledge, must rest upon internal evidence, it is nevertheless a cogent one. Evidence is presented in terms of Middleton's sentence patterns, his diction and imagery, his metrics, and his methods of characterization. An attempt has been made to go behind the statistics to establish the playwright's basic cast of mind as it is reflected in ingrained compositional habits, such as his predilections for abstraction and personification, and for interrogative and expletive sentence moulds. Middleton's claim to authorship is substantiated throughout by innumerable cross-references between *The Second Maiden's Tragedy* and the canonical plays. An appendix cites some sixty parallel passages.

IV. The play as tragic drama. The final section relates the play to the Jacobean theatrical environment in which it had its origin. The play is regarded as exemplifying a new kind of sensational drama, the tragedy of lust. The new genre represents an engraftment of spectacular and semi-perversed motives upon the old tragedy of revenge, in an effort to titillate the new audience of the King's Men at Blackfriars. Finally, the play is analyzed in terms of its artistic merits and defects, with particular reference to its dramatic structure, the thematic unity of its two plots, and its characters, which are developed according to the prevailing Jacobean ideas of dramatic decorum.

413 pages. \$5.16. MicA54-2086

MATHEMATICS

REGULAR CURVES AND REGULAR POINTS OF FINITE ORDER

(Publication No. 8534)

Lida Kittrell Barrett, Ph.D.
University of Pennsylvania, 1954

Supervisor: J. R. Kline

J. R. Kline has raised the question whether, for any positive integer n greater than two, there exists a continuous curve such that between each pair of its points there are exactly n simple arcs mutually exclusive except for end points. For n equal to one and two the arc and simple closed curve, respectively, have this property. J. H. Kusner has settled this question for n equal to three or four ("On continuous curves with cyclic connection of higher order," *Comptes Rendus des seances de la Societe des Sciences et des Lettres de Varsovie*, XXV (1932) Classe III, pp. 71-92). It is shown in Part II of this paper that for any integer n greater than two no such curve exists. The argument is based on the fact that in such a curve every pair of points can be separated by n points. In Part III of this paper it is shown that any continuum such that each pair of points can be separated by n points contains at most a countable number of points of order greater than n . The proof of this fact is based on three theorems concerning the sequential limit of a sequence of irreducible cuttings.

The final part of this paper answers two questions raised by W. L. Ayres concerning continuous curves containing points of only two orders. (See W. L. Ayres, "On the regular points of a continuum," *Transactions of the American Mathematical Society*, XXXIII (1931), pp. 252-262.) It has been shown that if a continuous curve contains points of only two orders, m and n , then m is greater than or equal to $2n-2$ (G. T. Whyburn, "On regular curves of at most order n ," *Bulletin of the American Mathematical Society*, XXXV (1929), pp. 218-224). Ayres conjectured that if $m > n > 2$ then (1) the points of order m must be countable and (2) for some integer k , $m = k(n-1)$. Examples are given to show that neither of these conjectures is true. 40 pages. \$1.00. MicA54-2087

BEHAVIOR OF ECCENTRICALLY LOADED COLUMNS WITH ELASTICALLY RESTRAINED ENDS

(Publication No. 8883)

John Wood Clark, Ph.D.
University of Pittsburgh, 1954

Structural members that carry compressive end loads are frequently subjected to bending moments

applied at the ends in addition to the forces producing axial compression. A combined axial load and end moment are equivalent to an eccentrically applied end load. The structure to which a column is attached usually provides some restraint against rotation of the ends of the column. If the resisting moment furnished by the adjacent structure is proportional to the rotation of the column ends, the end restraint is "elastic."

If an eccentrically loaded column is so proportioned that it does not collapse because of local buckling or lateral-torsional buckling, the column will continue to carry increasing loads until plastic yielding of the material so reduces the stiffness of the member that it becomes unstable and failure ensues. The determination of the conditions of loading that will cause the latter type of failure is the principal problem considered in this analysis. The problem is discussed in terms of the stress-strain characteristics of the aluminum alloys. However, the methods developed can be applied to other structural materials.

A solution is obtained by representing the deflected position of the column axis by a trigonometric series. The coefficients of the series are evaluated in such a way that the equilibrium condition is satisfied only at certain cross sections along the length of the column. This method has been applied by previous investigators to the case of simply supported columns with equal eccentricities at the ends. Although any desired degree of accuracy can be achieved by this method, depending upon the number of terms used in the series, emphasis is placed on the relatively simple results obtained by the use of only one or two terms of the series. The one-term solution gives a lower bound to the true ultimate strength.

A second approximate method of calculating the critical load is developed, using the assumption that the deflected position of the column axis can be represented by a number of segments of sine curves or, in some cases, straight lines. This method gives an upper-bound value for the critical load.

The calculations involved in the two methods of solution are outlined in general terms for the case of a column with arbitrary values of elastic end restraint and eccentricity of load. Formulas are developed in more detail for three specific cases: (a) equal end restraints and eccentricities; (b) zero eccentricity and restraint at one end; and (c) equal end restraints and equal and opposite eccentricities.

Sample calculations are included to illustrate the type of results achieved by the various methods of solution. 97 pages. \$1.21. MicA54-2088

ON FLUCTUATIONS OF SUMS
OF RANDOM VARIABLES

(Publication No. 8640)

Louis Jean Cote, Ph.D.
Columbia University, 1954

Summary

The results of this thesis are generalizations of results in three papers of K. L. Chung. They concern sums, $s_n = \sum_{i=1}^n X_i$, of independent random variables $\{X_i\}$ whose c.d.f.'s need not be the same. We use Cramér's expansion theorem for the c.d.f. of S_n which requires a condition, which we call here Cramér's condition, about the absolutely continuous components of the X_i .

Part II of the thesis generalizes the first theorem in K. L. Chung's "Fluctuations of Sums of Random Variables" (*Annals of Math.*, v. 51 (1950) p. 697-706). For a sequence of real numbers $\{c_i\}$, we say S_n crosses $\{c_i\}$ from above at k if $S_k > c_k$, $S_{k+1} < c_k$. Denote by T_n the number of crossings from above up to and including n . The result is

Theorem. If the c.d.f.'s of $\{X_i\}$ satisfy Cramér's conditions, $E X_i = 0$ ($i = 1, 2, \dots$); and

$$(1) \limsup_{n \rightarrow \infty} n^{-1} \left| \sum_{i=1}^n \alpha_{3,i+k} \right| = D < \infty \quad (D \text{ independent of } k)$$

$$(2) \lim_{n \rightarrow \infty} n^{-1} (s_{n+k}^2 - s_k^2) = B_2 > 0 \quad \text{uniformly in } k,$$

$$(3) \lim_{n \rightarrow \infty} n^{-4/3} \sum_{i=1}^n \beta_{4,i+k} = 0 \quad \text{uniformly in } k,$$

$$(4) \lim_{n \rightarrow \infty} n^{-1} \sum_{i=1}^n \beta_{1,i+k} = B_1 \quad \text{uniformly in } k, \text{ and}$$

$$(5) \lim_{n \rightarrow \infty} \frac{c_{n+k} - c_k}{\sqrt{k}} = 0 \quad \text{uniformly in } k,$$

then

$$\lim_{n \rightarrow \infty} P \left\{ T_n \leq x \frac{B_1 \sqrt{n}}{2\sqrt{B_2}} \right\} = \sqrt{\frac{2}{\pi}} \int_0^x e^{-\frac{t^2}{2}} dt.$$

Part III contains generalizations of the results in a paper by Chung and Erdős, "On the Lower Limit of Sums of Independent Random Variables" (*Annals of Math.*, v. 48 (1942) p. 1003-1013). The first theorem is for sums of X_i whose means are zero, fifth moments exist, and which satisfy Cramér's condition. **Theorem.** If constants g and G exist such that for every r

$$\beta_{2,r} > g \\ \beta_{5,r} < G$$

and

$$\liminf_{n \rightarrow \infty} \frac{s_{n+k}^2 - s_k^2}{s_k^2} \geq 1 \quad \text{uniformly in } k,$$

then for a non-decreasing function $\psi(n)$

$$P \left\{ \liminf_{n \rightarrow \infty} n^{\frac{1}{2}} \psi(n) |S_n| = 0 \right\} = \begin{cases} 1 \\ 0 \end{cases}$$

according as $\sum_{n=1}^{\infty} \frac{1}{n \psi(n)} \begin{cases} \text{diverges} \\ \text{converges.} \end{cases}$

The second section of III concerns lattice type X_i whose c.d.f.'s are equal. Without restriction we take the lattice to be the integers and $E X_n = x$. The main results are

Theorem. If $\beta_s < \infty$ and $\sum \frac{1}{n \psi(n)}$ diverges,

$$P \left\{ \liminf_{n \rightarrow \infty} n^{\frac{1}{2}} \psi(n) |S_n - nx| = 0 \right\} = 1$$

Theorem. Assuming only the first moment, if

$$\sum \frac{1}{n \psi(n)} \text{ converges,}$$

$$P \left\{ \liminf_{n \rightarrow \infty} n^{\frac{1}{2}} \psi(n) |S_n - nx| = 0 \right\} = 0$$

for almost all real numbers x .

The exceptional set of x in the second theorem always includes the rationals. A result of Chung and Fuchs shows that in the rational case, assuming the first moment, the probability is one and does not depend on $\psi(n)$.

In Part III are generalizations of theorems 2.2, 3.1, and 4 of Chung and Erdős "Probability Theorems Assuming only the First Moment, I" (*Memoirs of the AMS*, No. 6 (1951) p. 13). These relate to sums of independent, identically distributed lattice variables. In the Chung-Erdős paper two cases are discussed:

$$(0) E X_n = 0$$

$$(\infty) E(|X_n| + X_n) = \infty \quad ; \quad E(|X_n| - X_n) = \infty.$$

The results are extended to the case

$$E X_n = x$$

using methods similar to those of the paper.

92 pages. \$1.15. MicA54-2089

SOME CONTRIBUTIONS TO THE THEORY
OF MARKOV CHAINS

(Publication No. 8647)

Cyrus Derman, Ph.D.
Columbia University, 1954

Let $\{X_n\}$ $n = 0, 1, \dots$ be a denumerable Markov chain with stationary transition probabilities $\{p_{ij}\}$ $i, j = 0, 1, \dots$. In Section 1 the following theorem is proved: If all the states of an irreducible Markov chain are recurrent, then there exists one and only one set of positive numbers $\{v_k\}$, $v_0 = 1$ $k = 0, 1, \dots$ satisfying the equations

$$\sum_{k=0}^{\infty} v_k p_{kj} = v_j \quad j = 0, 1, \dots$$

and

$$v_k = \lim_{n \rightarrow \infty} \frac{\sum_{\gamma=0}^n p_{kk}^{(\gamma)}}{\sum_{\gamma=0}^n p_{00}^{(\gamma)}}.$$

Several examples are given to show that this theorem does not hold for transient Markov chains. The above theorem is applied to the study of the behavior of many (possibly infinite) particles moving independently about the states of a Markov chain, all according to the same transition probabilities $\{p_{ij}\}$.

Let $N_n(i)$ denote the number of times $X_\gamma = i$ for $1 \leq \gamma \leq n$. In Section 2 several strong limit theorems are given concerning the relation for large n between $N_n(i)$ and $N_n(j)$ for any states i and j belonging to the same class of states. In particular the following theorem is given: If i and j are any two states belonging to the same recurrent class and if $\varphi(n)$ is any non-decreasing, unbounded function, then with probability 1 the inequality

$$\left| \frac{N_n(j) - N_n(i) v_j/v_i}{(N_n(i) + N_n(j))^{1/2} \varphi(N_n(i) + N_n(j))} \right| > C_{ij}$$

will be satisfied for infinitely many or at most fi-

nitely many n according as $\sum_{n=1}^{\infty} \frac{\varphi(n)}{n} e^{-\frac{\varphi^2(n)}{2}}$ di-

verges or converges. The value of C_{ij} is computed.

In Section 3 sufficient conditions are given such that for any states i_1, \dots, i_r the distributions of the vector random variables $(N_n(i_1), \dots, N_n(i_r))$ when properly normalized tend as $n \rightarrow \infty$ to a Multi-Variate Normal distribution. The means and the covariance matrix of the limiting distribution are computed. These results are used to derive the asymptotic distribution theory of estimates of the transition probabilities $\{p_{ij}\}$. This in turn is used to derive the asymptotic distribution theory of a certain "goodness of fit" statistic. 68 pages. \$1.00. MicA54-2090

ON THE ROOT NUMBER IN THE FUNCTIONAL EQUATION OF THE ARTIN-WEIL L-SERIES

(Publication No. 8653)

Bernard M. Dwork, Ph.D.
Columbia University, 1954

The Artin concept of conductors of characters of galois groups of number fields may be extended to characters of Weil groups. These conductors, themselves of interest, lead by the methods of Artin to the functional equation of the Weil L-series. The problem of determining the root number appearing in this functional equation is studied with emphasis upon the possibility of decomposing the root number into factors which depend only upon the local behavior of the

character. A decomposition exists if the Tate factors (i.e. the factors appearing in the functional equation of the local zeta functions of Tate) may be extended in a natural manner to characters of local Weil groups (decomposition subgroups of Weil groups). The investigation of Tate factors indicated by this line of reasoning gives the main result of the thesis: If K is an abelian extension of a local number field, k , X is a character of K^* trivial on the kernel in K^* of the relative norm, and $\sigma_1, \dots, \sigma_n$ is the set of all characters of k^* whose composition with the relative norm is X , then the ratio between the Tate factor for X and the product of the factors for $\sigma_1, \dots, \sigma_n$ is a fourth root of unity depending only upon the conductor of X and the square of the ratio depends only upon the norm group and the relative degree. It follows that at best the fourth power of the Tate factors may be extended to characters of the local Weil groups. The conjecture that the fourth power may indeed be so extended is verified under a restrictive hypothesis, from which it follows that the root number associated with the Weil L-series, $L(s, X, K/k)$, may be decomposed modulo the fourth roots of unity if K/k is locally cyclic. The same conclusion holds for the Artin L-series if K is an abelian extension of an abelian extension of an intermediate field which is normal over k and locally cyclic. 135 pages. \$1.69. MicA54-2091

GENERALIZED VECTORS AND THE MATRIX EQUATION $X^{(k)} = B$

(Publication No. 8922)

William Calvin Foreman, Ph.D.
University of Kansas, 1952

The set of $l \times n$ matrices over a field K forms an n -dimensional vector space $L_n(K)$ under ordinary matrix addition and multiplication of matrices by elements of K . By analogy, $k \times n$ matrices over K , $1 \leq k \leq n$, are presented as k -dimensional vectors. The k -th order minors of the matrix of a k -dimensional vector are called its components, and when arranged in lexicographical order form the elements of the $1 \times N$ matrix over K , $N = n!/((n-k)!k!)$, which is the k -th compound of the former matrix and which, in turn, represents an ordinary vector in an N -dimensional vector space over K , called the associated N -space of $L_n(K)$. For affine considerations, the convex body determined by an ordered $(k+1)$ -tuple of vectors is called a k -cell; the measures of its projections on the k -dimensional, coordinate hyperplanes are called its components; and the N -tuple consisting of its components taken in lexicographical order is called the k -vector determined by the k -cell. This leads to the definition of generalized inner product, norm and distance functions for k -cells which are treated as localized, k -dimensional vectors. The properties of these functions are deduced. At least a score of representations for the generalized inner product, and more than a dozen representations for the Euclidean volume of a k -cell in a real vector space, are

developed. Some of these are well-known; others are new. Simple proofs are given of the known fact that a necessary and sufficient condition for an N -tuple of elements of K to be the components of a k -cell (or a k -vector) is that they satisfy certain quadratic relations, called the Grassmann quadratic relations. These relations are shown to be equivalent to certain symmetric quadratic forms whose matrices are called the special Grassman matrices. The Grassmann matrices are then the set of all linear combinations of special Grassmann matrices. The k -vectors determine a set of quadrics, called the Grassmann quadrics, in the associated N -space, and a vector in this space is a k -vector if, and only if, it annihilates the set of Grassmann matrices. Certain duality principles are established for Grassmann matrices. The effects on the components of k -cells and on k -vectors of various linear transformations on $L_n(K)$, as well as on the associated N -space, are investigated. Several interesting and unexpected results are obtained. For example, it is shown that for $n = 2k$ there are linear transformations on the associated N -space which transform k -vectors into k -vectors but whose matrices are not k -th compounds. Since all linear transformations on the associated N -space whose matrices are k -th compounds of $n \times n$ matrices over K transform k -vectors into k -vectors; this shows that, for $n = 2k$, the k -th compound group, consisting of all linear transformations on the associated N -space whose matrices are k -th compounds of non-singular $n \times n$ matrices over K is a proper subgroup of the Grassmann group which consists of all non-singular linear transformations on the associated N -space under which the intersection of the Grassmann quadrics remains invariant. This naturally raises the question of when is a matrix a k -th compound. This question is answered, except for the singular case in which the matrix under consideration has rank k . Furthermore a method is given for constructing the matrix X which is a solution of the equation $X^{(k)} = B$ when k and B are known and a solution is possible.

296 pages. \$3.70. MicA54-2092

OPERATORS IN REPRODUCING KERNEL SPACES

(Publication No. 8923)

Alan Kellerman Jennings, Ph.D.
University of Kansas, 1954

The main purpose of the paper is to study operators in a functional Hilbert space having a reproducing kernel. N. Aronszajn considered an interesting representation of a bounded operator L in terms of a kernel $\wedge(x,y)$, where the scalar product of f with \wedge , for each point y , gives the value of Lf at this point. The kernel \wedge thus plays a role similar to that of the kernel for an integral operator. It is the author's aim to develop further a general theory of operators (possibly unbounded) represented by kernels \wedge .

The investigation is divided into three parts. The

first four sections of Part I are concerned with some elementary properties of transformations in a Hilbert space, including the notion of a "subnormal" operator — which corresponds to the restriction of a normal operator in the same fashion as a symmetric operator corresponds to the restriction of a self adjoint operator. The last section of Part I deals with the problem of finding semi-bounded self adjoint extensions of a semi-bounded symmetric operator. In this section the class of self adjoint extensions having the same semi-bound as the original operator is characterized, a necessary and sufficient condition is given for such an extension to be unique, and the other semi-bounded self adjoint extensions are discussed, including the extension of K. Friedrichs.

Part II is concerned with representable operators in an r.k. space, i.e. in a functional Hilbert space F with a reproducing kernel K the author considers operators L represented by kernels $\wedge(x,y)$ by the equation $Lf(y) = (f, \wedge_y)$, where $\wedge_y(x) = \wedge(x,y)$. In section 2 the notions of a maximal operator L_M and a minimal operator L_m corresponding to a given kernel \wedge are introduced, and it is shown that $\wedge_y \in F$ and $\wedge_y^* \in F$, where $\wedge^*(x,y) = \overline{\wedge(y,x)}$, are necessary and sufficient conditions for L_M and L_m both to exist. The sum and product of representable operators is discussed in section 3, and the notion of a "subnormal" kernel is introduced in section 5 — corresponding to the notion of a subnormal operator introduced in Part I. In section 6 symmetric kernels are analyzed, the deficiency indices of L_m are characterized in terms of \wedge , and a positive matrix \wedge is shown to correspond to a positive operator L_m . Finally section 8 is concerned with the analogy between Carleman integral operators and representable operators in an r.k. space.

Part III is concerned with a fixed maximal operator L in an r.k. space F . The natural extension of L to the whole space F is defined by putting $L_1 f(y) = (f, \wedge_y)$ for $f \in F$. A natural r.k. space containing both the class F and the class $L_1(F)$ is taken to be $F_1 = F + L_1(F)$, where the new reproducing kernel is $K_1(x,y) = K(x,y) + (\wedge_y, \wedge_x)$. The space F_1 is shown to be isomorphic to the graph of L^* (the adjoint of L), and many properties of L_1 (in the space F_1) are characterized in terms of properties of L . It is found that the extension L_1 is sometimes bounded in F_1 even though L is not bounded in F . The properties of symmetry and subnormality are seen in sections 2 and 3 to be carried over from the operator L to the extended operator L_1 . Section 4 contains a rather detailed analysis of the relation between the spectrum of L and the spectrum of L_1 . Finally, section 5 continues the discussion of Carleman integral operators.

Many examples are included throughout, which serve to illustrate that the situations discussed in the text may actually be attained, and sometimes to show that the theorems stated are the best possible under the given assumptions.

98 pages. \$1.23. MicA54-2093

LIE ALGEBRAS AND TOPOLOGICAL GROUP EXTENSIONS OF LOCALLY COMPACT GROUPS

(Publication No. 8707)

Richard Kenneth Lashof, Ph.D.
Columbia University, 1954

Part I: Lie Algebras

An LP-group is defined as the projective limit of Lie groups. H. Yamabe has proved that every connected locally compact group is an LP-group. This permits the extension to locally compact groups of the notion of a Lie Algebra. The existence and uniqueness of the Lie algebra of an LP-group is proved and the connection of the Lie algebra with the group by means of the exponential mapping is shown.

A universal covering group for connected groups with the same Lie algebra is defined. A universal covering group of a connected locally compact group is not necessarily locally compact and may not map onto the group. A one to one correspondence between "canonical LP-subgroups" of a group and subalgebras of its Lie algebra is established.

This theory is then applied to the group of automorphisms of a locally compact group. A connection is shown between the group and the algebra of derivations of its Lie algebra, and likewise for the inner automorphisms and the inner derivations.

Part II: Topological Group Extensions

A cohomology theory of topological group extensions is given under the assumption that the base group admits a covering group over which every extension is topologically trivial. It is shown that the cohomology theory needed is a special case of that used in continued extensions.

The application of this theory to extensions over locally compact groups which admit simply connected covering groups is made possible by showing that every extension of a simply connected locally compact group by an arbitrary locally compact group is topologically trivial. 62 pages. \$1.00. MicA54-2094

RELATIONS BETWEEN FINSLER METRICS AND LEVI CIVITA PARALLELISM

(Publication No. 8903)

Robert Wilson Long, Ph.D.
University of Pittsburgh, 1954

In Riemannian Geometry the geodesics may be considered as characterized in two ways:

- As those curves of shortest length joining two points.
- As those curves whose tangents are parallel with respect to the curves, where by parallel we refer to Levi Civita Parallelism.

In this paper we have considered a space S with an affine connection L and a Finsler metric F . The

necessary and sufficient conditions were sought such that paths of S coincide with the geodesics and such that the arc length along the geodesic be an affine parameter of the path. The necessary and sufficient condition for this is that F must be a solution of the equation

$$\frac{\partial F}{\partial x^i} \Gamma_{jh}^i \dot{x}^j - \frac{\partial F}{\partial x^h} = 0.$$

The integrability condition for the above equation is found and the method shown for finding a sequence of sets of compatibility conditions. These equations led to the necessary and sufficient conditions for the existence of an F satisfying the conditions described in the last paragraph.

If a Riemannian space is now considered, we know that the paths and geodesics coincide in the space, so the Riemannian metric must be a particular solution of the above equation. Therefore if we now form a differentiable homogeneous function of degree zero of this particular solution, the function so formed will be a non-Riemannian Finsler metric of the space whose geodesic will coincide with the paths (or geodesics) of this Riemannian space.

As in Riemannian Geometry it is found that the necessary and sufficient condition that a vector λ may be displaced by parallelism around a closed curve C from its initial λ_0^i to its final position λ_1^i without producing any change on λ is that the tensor $L_{\alpha kh}^i$ vanish.

Further the tensor $L_{\alpha khm}^r = f_{\alpha r} L_{khm}^r$ is considered. It is shown that the skew symmetry of the covariant Riemann Tensor $L_{\alpha khm}$ in the first two indices is equivalent to the following two conditions taken together:

- The covariant Riemann tensor is independent of the \dot{x} 's.
- The first integrability condition

$$\Gamma_{jhk}^i \dot{x}^j \frac{\partial F}{\partial \dot{x}^i} = 0$$

is fulfilled.

We next consider whether the length of a vector remain invariant when displaced by parallelism to a neighboring point. It is concluded that two of the following three statements imply the third:

- The affine connection is symmetric.
- The equation in the first paragraph is fulfilled.
- The length of any vector undergoes no change under any parallel displacement.

Further it is determined that the necessary and sufficient conditions for the invariance of the length of any vector under parallel displacement is that the integrability condition stated above is satisfied.

Finally, consideration is given to the possibility of constructing an isometric correspondence of a Finsler space with itself. The necessary and sufficient conditions are found which must be satisfied in a Finsler space in order that: given any configuration in the first order neighborhood of a point P of the space it is possible to construct in the neighborhood of another point P' in space, and with an arbitrary orientation, a

configuration which is congruent to the given one. Here we mean by congruent that a one-to-one correspondence can be established between the two configurations in such a way that the distance between any two points of one configuration equals the distance between the two corresponding points.

42 pages. \$1.00. MicA54-2095

COMPLETELY DISTRIBUTIVE COMPLETE LATTICES

(Publication No. 8765)

George Neal Raney, Ph.D.
Columbia University, 1953

Let L be a complete lattice. L is called completely distributive if (I) the meet operation is distributive with respect to the join operation and (II) the join operation is distributive with respect to the meet operation, with no restriction of the cardinalities of the sets on which these operations are applied. Known examples of completely distributive complete lattices are the complete rings of sets and the complete chains. (Complete rings of sets are families of sets which are closed with respect to intersection and union; complete chains are totally ordered sets in which every subset has a greatest lower bound and a least upper bound.) Homomorphic

images, closed sublattices, and direct unions of families of completely distributive complete lattices are also known to be completely distributive.

The first principal theorem is that each of the following four statements implies the others: 1) L is completely distributive; 2) L satisfies condition (I); 3) L satisfies condition (II); 4) L is a complete homomorphic image of a complete ring of sets. A condition is given which is satisfied by L if and only if L is isomorphic with a complete ring of sets, and it is shown that L may be completely distributive without satisfying this condition.

The second principal theorem is that for any cardinal number n , L is a free completely distributive complete lattice with n generators if and only if L is isomorphic with the complete ring of semi-ideals of the Boolean algebra of all subsets of a set with n members. (A subset M of a partially ordered set is called a semi-ideal if whenever $x \in M$ and $y \leq x$, then $y \in M$.) A simple description of generation in completely distributive complete lattices is given and used in the proof of this result.

The third principal theorem is that L is completely distributive if and only if L is isomorphic with a closed sublattice of the direct union of a family of complete chains. The proof of this result depends on the extension of a known connection between complete rings of sets and partial orderings to one between completely distributive complete lattices and idempotent binary relations.

32 pages. \$1.00. MicA54-2096

MUSIC

A HISTORY OF THE NATIONAL ASSOCIATION OF SCHOOLS OF MUSIC

(Publication No. 8950)

Carl Melvin Neumeyer, Mus. Ed.D.
Indiana University, 1954

The major purpose of the study has been to bring together a comprehensive record of the founding and development of the National Association of Schools of Music. Prior to this investigation, no serious attempt had been made to assemble the details of the historical development, the functions and the purposes of this voluntary organization of institutions in higher education. In addition to this ultimate objective, additional proximate objectives have included the following:

1. To determine the status of educational standardization at the time of the founding of the Association.
2. To determine the status of conservatory, college, and university music education prior to the discussions that led to the establishment of the Association.
3. To identify the leaders in the movement for evaluation and standardization in the field of music.

4. To trace the development of the various commissions and committees and to record their contributions to the development of the present practices of the organization.

The historical method of approach has been the plan of investigation. The general plan of the report provides for two major divisions the first of which deals chronologically with the background and development of the organization and the second of which deals with special topics centered around its structure and operation.

The investigation has shown that, by the early years of the twentieth century, music had been given a degree of academic recognition in colleges and universities in the United States and that a number of independent professional schools had been established, some of them having functioned for half a century. By the second decade of the century there had also developed among administrative officers in the field of music a recognition of the need for a systematic plan for the further orderly development of music education in American institutions. It has been shown further that, prior to this period, associations of practitioners in various other fields had been established for similar purposes and that organizations of educators had been founded with the purpose of

formulating methods of evaluation of institutional effectiveness with the ultimate objective of improving educational standards and protecting society from institutions felt to be offering inadequate educational opportunities.

The Association founded in 1924, developed from a loosely-knit discussion group consisting of a few individuals representing widely differing philosophies of music education. It quickly grew to be an organization truly national in scope and since 1928 has been an organization of institutions rather than of individuals. As an institutional group constituted to contribute a mutual service it became the common

meeting ground for the areas of professional music, school music, and music in general education. It attained a position of leadership and has been thus recognized both by other professional societies in the field of music and in education. Institutional membership has always been entirely voluntary and institutional delegates work on a voluntary, cooperative basis. While the early years were devoted largely to the development of standards and techniques for their application, the organization has operated throughout its duration under powers conceived from the outset as being purely advisory in character.

449 pages. \$5.61. MicA54-2097

PHARMACOLOGY

A STUDY OF THE INFLUENCE OF ANTICOAGULANTS ON THE FORMATION AND REGRESSION OF EXPERIMENTAL ATHEROSCLEROSIS

(Publication No. 8350)

Akira Horita, Ph.D.
University of Washington, 1954

The actions of anticoagulants on the formation and regression of experimentally-induced atherosclerosis have been studied. Seven week old cockerels were placed on a 2 per cent cholesterol - 5 per cent oil - mash diet for periods of 8 and 12 weeks, during which continuous treatment with either heparin or dicoumerol was given. During this time their growth, serum cholesterol and lipid phosphorus were determined bimonthly. The birds were sacrificed after the designated periods and examined for atheromatous lesions in the aorta, brachiocephalic and iliac arteries. Grading of the severity and incidence of the lesions was based on an arbitrary system from 0 to 4. Microscopic examinations of both aortae and coronary arteries were made using hematoxylin-eosin and/or Sudan IV stains. At the 8 week period cockerels treated with either heparin or dicoumerol exhibited a marked protection as compared with the untreated cholesterol-fed group. The means of the serum cholesterol of the treated groups also was significantly lower than those in the untreated animals. After 12 weeks on the experimental regimen

the anticoagulant protection was almost absent. Likewise the mean serum cholesterol of the anticoagulant-treated and the untreated groups no longer showed a significant difference. During both the 8 and 12 week periods the serum exhibited marked turbidity even in the heparin-treated group. The second series of experiments was concerned with the action of anticoagulants on the regression of atherosclerosis in the chick. After being fed a high cholesterol diet for a period of 12 weeks the chicks were divided into three groups. They were maintained on a plain mash diet for an additional 10 weeks, during which time heparin and dicoumerol were administered to two of the groups. Serum lipids were determined bimonthly throughout the experiment. At the end of the experiment gross and microscopic examinations were made of the aorta and other vessels. The results from this series of experiments demonstrated no beneficial effect of heparin or dicoumerol on the regression of experimentally-induced atherosclerosis in the chick. Not only the regression of the lesions but also the serum lipid picture was uninfluenced by the prolonged anticoagulant treatment. It was therefore concluded that while both heparin and dicoumerol were effective in retarding the formation of cholesterol-induced atherosclerosis, once the atheroma had been produced, the anticoagulants were no longer effective. The role of heparin in fat metabolism as well as its role in atherogenesis has been discussed.

98 pages. \$1.23. MicA54-2098

PHILOSOPHY

PERCEPTUAL VALUE AND THE NEW ESTHETICISM

(Publication No. 8916)

George Alfred Clark, Ph.D.
University of Pennsylvania, 1950

Supervisor: Professor John Stokes Adams, Jr.

There is a "new estheticism" current among certain artists, art historians, critics, estheticians, and philosophers. The unifying concept in this movement may be called "perceptual value," a term used to designate the peculiar value quality in those experiences, typically esthetic, in which value is apparently realized without being conditioned on a foregoing desire. This concept may be traced in Plato's pure pleasures (*Philebus*) to be found in observing clear colors and geometrical designs, in St. Thomas' definition of the beautiful as *id quod visum placet*, and in Schopenhauer's esthetic metaphysics where self-consciousness becomes pure will-less subject of knowledge. Among contemporaries, Herbert Read, Müller-Freienfels, and Philip Blair Rice (who coined the term "perceptual value") have emphasized the concept.

Schopenhauer's substitution of esthetic contemplation for the traditional philosophical ideal of the *vita contemplativa* in which Reason was the object, forms the philosophic background for the estheticism of the group around Flaubert, Pater, and Wilde. Like these, the new esthetes emphasize perceptual value, but also like Ruskin and Morris they emphasize the social values likely to flow from their position. Perceptual value as disinterested is sharable and can contribute to political and economic harmony. The new esthetes seem to think that the interest theories of value based on "conative values" (those realized in the satisfaction of desires) are an expression of an out-moded cultural complex which includes individualism, science, democracy, capitalism, and protestantism as its chief ingredients. They hold further that a fuller recognition of perceptual value in school and society will lead to a more satisfactory cultural complex, which while still embodying some of the foregoing elements, will also modify them by mystical, unifying, organic, and esthetic characteristics. The value criterion for conative values seems to be "efficiency" in the mutual adaptation of often conflicting unitary desires, whether within persons or among people. Adam Smith's *Wealth of Nations* is the economic expression of conative values and Perry's *General Theory of Value* is a modern re-statement. As opposed to this criterion, that for perceptual value would be something like sufficiency of the situation.

The trend toward mysticism is apparent in the interpretations of art offered by Sorokin, Read, Faure, Cheney, and Toynbee. Among artists, Matisse, Picasso, Marc, Chagall, Roualt, Gill, and

Marin have expressed similar tendencies. Critics like Mumford, Koestler, Huxley, Werfel, and Eliot have progressed more or less rapidly from the commissar toward the yogi. Among philosophers, Maritain and Coomaraswamy, Edman, Joad, Northrop, Langer, and Hertz show similar esthetic and mystical tendencies.

Those represented by this group seem unanimous in rejecting "interest" with its economic model as the central value concept and are pessimistic about the continuation of the culture which embodies it. They are by no means agreed as to what should be substituted for interest, but all seem to think there is a clue in esthetics. Perhaps the dominant trend is that which stems from Herder, who wanted to think of nations as mutually helpful fatherlands rather than as political machines. Most of the new esthetes feel (like Schopenhauer) that oriental art and thought may provide the perceptual complement to European *laissez-faire*. Some of the new esthetes, like Northrop, conceive a sufficient world situation as now possible, and to be achieved in part through a world philosophy in which the "theoretical component" and the "esthetic component" are harmonized.

108 pages. \$1.35. MicA54-2099

THE PHILOSOPHY OF JOHN GROTE

(Publication No. 8664)

Sidney Gelber, Ph.D.
Columbia University, 1954

John Grote (1813-66), Knightbridge Professor of Moral Philosophy at Cambridge and Vicar at Trumpington, was one of the more provocative thinkers of his times. His writings reveal a searching examination of the dominant themes of philosophic inquiry. With the exception of the *Exploratio Philosophica*, Part I (1865), the publication of his major works was posthumous. These include *An Examination of the Utilitarian Philosophy* (1870), *A Treatise on the Moral Ideals* (1876), and the *Exploratio Philosophica*, Part II (1900).

In the spirit of Hegel's *Phenomenologie* Grote exposes the methods and suppositions of the traditional modes of philosophic analysis and finds them to be incomplete indices to the ramified characteristics of reality and experience. He regards philosophy as historically engaged in a dialectic of ambivalent viewpoints. The accent of "phenomenalism" in Mill, for example, stands in contrast to the idealism of Kant. The former theme is guided by the supposition of the independent existence of the "external" world. And the latter focuses its attention upon the knowable nature of things. Each perspective, correct within its own framework of reference, fails to incorporate the

essential features of the other. And each species of analysis may degenerate into even less satisfying appraisals of existence. "Phenomenalism" may be converted to a reductive positivism; and idealism is open to the possibilities of translating the abstractions of thought into existential realities ("notionalism").

Grote, however, views philosophy as committed to explore the nature of human experience and its ideals. Although its point of departure must be idealistic, philosophy must meet the challenge to recognize the values of "phenomenalistic" inquiry. For Grote this cannot be accomplished merely by fusing the basic suppositions of "phenomenalism" and idealism — this "error" ("mis-psychology") persists in much of modern philosophy. Rather, the answer to this dilemma lies in the reconstruction of the meaning of "experience."

Grote rejects any bifurcation between self and its environing circumstances. Feeling, perception, and thought represent varying degrees of the relation, or "communication," between self and non-self. Every phase of experience can be hypothetically arranged upon a "scale of sensation," moving from a greater to a lesser involvement with "corporeal communication." And each element within the "scale" possesses, as it were, at least two dimensions — an "outer," or "phenomenal" side ("proverse") and an "inner" one ("retroverse"). "Matter" and "mind" are generalized abstractions occupying opposing ends of the "scale," the relation between them being one of "contemporaneity" and "congruence."

Knowledge, however, is never "immediate." All phases of experience mediate between "thinkingness" and "thoughtness." Knowledge, as the "communication" of "mind with mind," becomes our most articulate mode of "communication." In addition to our "acquaintanceship with" things we possess "knowledge about" them — the basis for logical discourse. Our logical constructs are tentative and corrigible instruments for the acquisition of knowledge. In spite of its fallibility, knowledge is corrective within the career of "learning," or the cumulative development of experience.

Grote's speculations on human action and moral theory stand in opposition to the utilitarianisms of Bentham and Mill. He rejects their framework as too narrow. For man strives to resolve his need for "right action," in addition to the satisfaction of his desires. The basis for man's career as a human creature is the need for human expression. Morality, art, science, and religion signify not only the varieties of human expression, but symbolize man's constant quest to respond positively to this mode of human "power." Man is thus a prospective creature, ever engaged in the exploration and articulation of the ideals for the conduct of his life.

257 pages. \$3.21. MicA54-2100

ETHICS AND MANNERS

(Publication No. 8688)

Donald Clark Hodges, Ph.D.
Columbia University, 1954

This is a theory of manners developed in terms of what is here called "an expressional ethics." A utilitarian ethics, insofar as it is concerned with the consequences of human action, is of primarily political significance, as an intentional ethics, which is concerned with a man's inner being, is fundamentally moral. The attempt to reduce the meaning of ethical expression to utilitarian or intentional terms is subject to the same kind of criticism as past attempts to reduce a utilitarian to an intentional ethics or conversely. An expressional ethics has its own autonomous subject-matter restricted primarily to the values of ethical appearance.

The common essence of manners is the expression or appearance of the ethical. Manners may be a revelation of moral or political qualities but the qualities peculiar to manners are those encountered in social intercourse. The expression of moral or political qualities is distinct from and irreducible to the moral or political qualities expressed. It is what a man seems, rather than what he is or does, that is important to the consideration of manners. An expressional ethics has for its unique subject-matter the values of ethical appearance. Such values have a reality of their own, and they are no less real just because they appear.

As moral values are peculiar to person-to-person relations, and political values to the impersonal relations between members of organized associations, so the values of manners are peculiar to the face or surface of social intercourse. Sociologists have not sharply distinguished the province of face-to-face from that of person-to-person relations, so that the so-called primary group is believed to include all simple and direct forms of human acquaintance. But a neighborly or friendly relationship goes deeper than a mere face-to-face encounter, and the latter term is both misleading and incorrect in designating what is fundamentally a communication of human character. A face-to-face relation need have no reference beyond itself: the face is the mirror of social approbation or disapprobation but it may or may not be a revelation of moral or political qualities.

The attempt to answer the question "What are manners?" leads to an examination of the acts, codes, sanctions and principles which are natural or peculiar to them. The philosophical conception of manners which has become traditional is that, insofar as they are ethical at all, manners are of only minor importance, and are reducible to a branch of morals or politics. I argue that manners are neither minor nor moral nor political, and that they constitute a major and independent dimension of ethics. Not only can they not be adequately explained by, but their meaning is distorted when conceived exclusively in terms of moral or political theory. The appearance of ethical values in peculiarly social encounters cannot be dismissed as trivial, so that it is a mistaken

conception that would reduce manners to a concern with the "little things." Manners occur on the surface of human nature but they are not necessarily superficial.

Most of the literature of manners is highly unphilosophical and composed of isolated studies which fail to provide anything but partial descriptions of the nature of manners. The acts, codes and sanctions of manners are studied out of relation, not only to each other, but to their first principles. The literature of manners is highly specialized: there are social, humanistic and technical studies each with their own particular problems. The social studies are primarily inquiries into the acts of manners; humanistic studies are concerned with the forms of etiquette; and technical studies with the sanctions of manners. The philosophy of manners provides a knowledge of their fundamental principles and serves to integrate and give perspective to these isolated studies.

358 pages. \$4.48. MicA54-2101

THE ETHICS OF THOMAS HILL GREEN

(Publication No. 8697)

Ernest Daryl Kent, Ph.D.
Columbia University, 1954

The English philosopher, Thomas Hill Green (1836-1882), became the leader of an Idealistic revolt against Naturalism. Heavily influenced by Immanuel Kant, but starting from certain religious pre-suppositions, Green sought to provide a firm, transcendental basis for ethics. He did this through an analysis of the metaphysics of knowledge. The main problems of the analysis center around Green's conception of an eternal self-consciousness which is not in time, his doctrine of relations which involves an infinite regress, and an analogical argument which jumps from what is true for us to what must be true for an eternal self-consciousness.

On its formal side, Green's ethical theory follows his metaphysics. There is an eternal self-consciousness which is the source of our moral life. It is the source of our moral ideal and progress in morality means that the eternal self-consciousness is gradually reproducing itself in us. This moral ideal serves as a categorical imperative by telling us that there is a perfect good for which we can and should strive. Moral obligation consists in doing that which will realize our self. The function of the ideal is to tell us that there can be no real moral conflict; to protect us from selfish desires and impulses by telling us that there is always a better than we do; and to force us ever to examine our motives and actions so that better habits of moral action can be established.

Green regards his moral ideal as practical if it can tell us what ought to be done and whether we are doing it. What he succeeds in doing is to show the inter-relationship of motive and character, and, in pointing out the importance of character in moral

action, he does not succeed in showing that the moral ideal performs a significant function. The most that it can do is to inspire men, and it can do this only in a vague and general way.

On its empirical side, Green's ethics regards man as a free agent in that he is self-determining. The motive for all action is the desire to satisfy the self. The goal of all moral action is to achieve complete self-realization. Concomitant with the moral good as self-realization is the common good. The content of the moral ideal and the common good is to be determined by an analysis of the existing institutions and moral habits of society. The area of the common good is broadened as men carry farther what is implied in the existing ideals of moral behavior.

In comparing the Utilitarian system with his own, Green thinks that he has shown that the Utilitarian analysis of the moral ought and the moral motive is inadequate. What he fails to recognize is that the objections that can be leveled against the Utilitarian system can also be leveled against his own. Both systems analyze motive in terms of desire. Obligation, in both systems, is spoken of as that which promotes the interest of a self — pleasure for the Utilitarians, self-realization for Green.

In spite of Green's attempt to establish ethics on a transcendental basis, his actual approach to ethics is very similar to the Naturalistic systems which he attacked. In several instances Green sharpens and broadens the Utilitarian concepts, without, however, giving them that radical transformation which he had thought to give. In spite of the difficulties of Green's system of ethics, there is much of value there, for it is the product of a sensitive spirit and an enquiring mind.

294 pages. \$3.68. MicA54-2102

PROBLEMS OF ART INQUIRY

(Publication No. 8719)

Matthew Lipman, Ph.D.
Columbia University, 1953

Like any other phase of scientific investigation, the inquiry into art encounters problems in which both the subject-matter to be selected and the method of investigation to be employed have been placed in doubt. What the present study seeks to do is to reformulate some of the issues involved when these interrelated aspects of inquiry have themselves become problematical.

Questions are first taken up dealing with definition and method in art inquiry. What do we mean when, in speaking of art, we use such terms as "process," "quality," "pervasive," "situation," "subjective"? What do we mean when we say that criticism must restrict itself to the analysis of artistry alone? What do we mean when we affirm or deny that art is a kind of thought? Discussion of these issues sets the limits within which the more specific problems in the remainder of the study are to be analyzed. Particular attention is paid to the concept of so-called "tertiary

qualities," which appear to permeate the work of art in its entirety.

The central portion of the thesis is devoted to three problems which, unless solved, persist as obstacles to any firm understanding of the foundations of the esthetic response. These problems are posed by the nature of our rudimentary responses to the physical thing and to the human body, and by the very nature of the involvement of personal identity in esthetic experience.

Finally, consideration is given to traditional categories of esthetic experience, with suggestions for preferable modes of investigation. An analysis is made of the function of ideas in art, and the creative, appreciative, and critical phases of the art process are examined to determine how best to deal with them scientifically as well as philosophically. Wherever possible, therefore, reference is made to experimental or analytical investigations of art whose approach contributes to the advancement of the methods of art inquiry.

192 pages. \$2.40. MicA54-2103

HISTORICAL KNOWLEDGE IN THE PHILOSOPHY OF R. G. COLLINGWOOD

(Publication No. 8729)

Donald Murray Mathers, Ph.D.
Columbia University, 1953

The general subject of the dissertation is Collingwood's attempt to work out a critical theory of historical knowledge and of the relations between science, history and philosophy. In the *Introduction* (pp. 1-15) after a general sketch of the writer's life and work, some account is given of the context of philosophical discussion within which it took place, of the relation between his professional work and his amateur, but extremely important, work in archaeology and history.

Chapter 2 (pp. 16-65) offers an account of his early comprehensive book *Speculum Mentis*, which is theory of the developing forms of human experience: Art, Religion, Science, History and Philosophy. The dependence of this book on the work of Croce, Gentile and Ruggiero, as well as Hegel, is discussed.

Chapter 3 (pp. 66-125) is concerned with Collingwood's theory of Philosophy as Categorical Thinking, as developed in the *Essay on Philosophical Method* and the pamphlet *Faith and Reason*, and some discrepancies between the two are noted. Philosophy is here characterized as having this peculiarity, that reflection upon it is a part of itself. It is therefore categorical because it presupposes itself. It has to justify its own starting point and cannot take over its axioms from other fields of knowledge.

The next two chapters are concerned with Collingwood's attempt to establish a critical theory of historical knowledge on Idealist line. In Chapter 4 (pp. 126-168), the materials for this theory are examined under five heads: Imagination, Substance, Question

and Answer, the Individual, and the Inside and the Outside of Events.

In Chapter 5 (pp. 169-199) Collingwood's positive doctrine of historiography is developed under five heads: (1) The distinction between history proper and pseudo-historical studies such as geology and palaeontology; (2) All history is the history of thought; (3) Historical knowledge is the re-enactment in the historian's mind of the thought whose history he is studying; (4) Historical knowledge is the re-enactment of a past thought incapsulated in a context of present thoughts; (5) History is the science of human affairs.

Chapter 6 (pp. 200-229) describes Collingwood's attempt in the *Essay on Metaphysics* to re-establish Metaphysics as a historical science. The relation of this book to the *Essay on Philosophical Method* and the *Speculum Mentis* is discussed, along with the theory of Absolute Presuppositions and the charge of historical relativism which arose from it. Three types of metaphysics are distinguished: (1) a science of pure being, (2) a metaphysics of internal strain, and (3) a metaphysics of external pressures.

In the concluding chapter on Historicism and Truth, it is argued that Collingwood is not at fault in saying that Absolute Presupposition are not true or false but that he is wrong in supposing that they cannot be criticised or modified. It is further argued that they need to be pragmatically justified and used with economy so that they do not change capriciously or by historical accident, and that a series of constellations of absolute presuppositions might be related by use of the developmental logic typical of the *Essay on Philosophical Method*. Collingwood is defended against the charge of scepticism and incoherence. His philosophical development is described under Tillich's categories of philosophy and fate, and it is agreed that at the end of his life he had become a historical, though not a technological, Realist.

283 pages. \$3.54. MicA54-2104

COMMON SENSE AND ITS USE IN PHILOSOPHY

(Publication No. 8739)

Charles John Mosmann, Jr., Ph.D.
Columbia University, 1954

This essay attempts to discuss the various uses of the term "common sense" current in modern methodological writings, and to evince some more basic value for the term and some conception of the relation between common sense and philosophy. After an introduction to Thomas Reid and the historical Scottish common-sensism, five modern theories of common sense are considered: those of G. E. Moore, Charles Peirce, John Dewey, George Santayana and William James. On the basis of these theories, a general discussion of the use and value of common sense in philosophy is presented.

The specific problems dealt with are how common sense is related to philosophy and in what way this relationship affects philosophy. In a sense, the entire

investigation may be said to be concerned with the question of the growth of knowledge. Common sense, which is usually regarded as a fund of more or less adequate belief, at some point becomes insufficient. The growth of experience brings with it shocks to common sense; man's dissatisfaction with this primitive world view of common sense is the birth of philosophy.

Philosophy (like science) begins by trying to correct the vagueness, incoherence and inadequacy of common sense beliefs, but ends by creating novel belief. In order to interpret an ambiguous dictum of common sense (such as that minds are distinct from bodies or that we are directly aware of the physical universe) in a meaningful way, and answer such questions as may be asked, philosophers have had to enunciate new distinctions, invent new terms for new ideas, and in many ways go beyond and contradict common sense.

But common sense is more than the first stage of philosophy. It continues to be the fundamental fact of reality for all men. For philosophers do not remodel common sense itself; their positions derive from this basic set of beliefs, but it is itself too firmly rooted to be displaced by a desire for order and completeness on the part of philosophers. Common sense remains the actual instrument of daily living. Philosophy is the critique of this instrument, but it cannot alter the fact that reality as all men know it is basically common-sensical. We see nature through eyes trained in common sense: in terms of a single space and a single irreversible time, for example, and of such basic distinctions as mental and physical, real and imaginary, similar and different.

Philosophy finds its significance and justification in its relation to this bedrock of belief. Philosophy may introduce new terms which are not capable of definition in terms familiar to common sense, but these terms are meaningful only if they aid us in understanding experience, and common sense which is the spokesman for experience. Philosophy is justified only if it makes common sense in some way less problematic, or adequate to situations where it would not otherwise apply. Like the highly abstract theories of science, philosophical hypotheses have meaning and value only in their consequences at the common sense level.

Thus the ideas which philosophy presents have human import precisely because they are about common sense concerns, because they make richer and more meaningful the common sense world in which we live. The terms and concepts of philosophy are given empirical meaning and value by their relevance to common sense concerns, even when they are too abstract to have correlatives in common sense terms. And the beliefs of common sense are given definition and coherence in their philosophic development. Common sense and philosophy, while immensely different in significance and function, are yet parts of the same organic unity of human affairs.

232 pages. \$2.90. MicA54-2105

THE PHILOSOPHY OF AMERICAN POLITICAL PLURALISM

(Publication No. 8753)

Frithjof Ragnar Petersen, Ph.D.
Columbia University, 1954

The ultimate aim of this study is to investigate the philosophical construction and meaning of American political pluralism. It is intended to show that there are two distinct varieties of American pluralism: economic faction pluralism and pressure group pluralism. The first type, represented by John C. Calhoun and Daniel Webster, holds that any society is composed of at least two ultimate economic classes, irreducible one to the other. These are the owners of property and those who labor only, but have no property holdings. Between these two there is a conflict which, to avoid social anarchy and preserve the spirit and form of popular government, must be mediated and compromised by means of governmental control and action, particularly through the regulation of alienage and transmission of property. The second variety, represented by Charles E. Beard and Arthur F. Bentley, holds that any social order is irreducibly plural but not on economic grounds only. There is no single group or category that either wholly absorbs a man or is the explanatory key to an understanding of social processes.

Further, it is intended to show in what sense these men can be said to have cleared the ground for more interpretive systems of social philosophy. To accomplish this, it has been necessary to clarify in detail their respective beliefs concerning the concepts of the General Will, Human Freedom, Social Factions and the Resolution of Social Conflict. Under the first concept is subsumed the problem of sovereignty; under the second, the problem of human equality and rights; under the third, the source of factional or group conflict, and under the fourth, the proposed resolutions of social antagonisms through government or associative groups, especially political parties.

The method used is not that of textual analysis only, although it has been felt that all four men have suffered from neglect of important aspects of their thought. It has been necessary to treat some of the analysis of their basic concepts historically. This is particularly true in the cases of Calhoun and Webster, where the pluralism they espoused is overcast with a sense of defeat; a desire to protect a vital minority right in the face of a powerful and ruthless majority opinion. This characteristic is so pronounced that the term negative or defensive pluralism has been suggested as an alternate title to economic-faction pluralism. In the instance of the examination of Beard and Bentley the emphasis or direction of interpretation has been less historical and more textual. These men were characterized by an assertiveness or aggressiveness in theory which suggested that despite the prevalence of social conflict between various interest groups, the defense of the minority was not a paramount task since, indeed, conflict was and

will be the *sine qua non* of the social process. For this reason their pluralism is alternatively called assertive pluralism.

These four men have been chosen as best representative of American political pluralism; Calhoun and Webster for their resolute economic pluralism enabling an evaluation of the effect of economic factors on social groups; Beard and Bentley for their broadening of the plural perspective on society by the introduction of compelling evidence showing the profound effect of other non-economic associative groups on their members.

The conclusion of the essay is that American political pluralism is of two varieties, each of which makes significant contributions to the clarification of basic socio-philosophical concepts upon which, alone, a tenable social philosophy can be built.

206 pages. \$2.58. MicA54-2106

WILLIAM JAMES:
THE FORMATIVE YEARS, 1842 — 1884

(Publication No. 8754)

Sven Richard Peterson, Ph.D.
Columbia University, 1954

On February 1st, 1870, William James wrote in his diary: "Today I about touched bottom, and perceive plainly that I must face the choice with open eyes; shall I frankly throw the moral business overboard, as one unsuited to my innate aptitudes, or shall I follow it, and it alone, making everything else merely stuff for it?"

One of the chief factors of James's "moral problem" was his unstable health, which had kept him inactive during the Civil War, interrupted his studies at the Lawrence Scientific School, delayed his work at the Harvard Medical School, and had driven him to Germany in search of a cure. The root of his malady, however, lay in William's relationship to his fervent but quixotic father, and in the educational ideals which Henry Sr. set before his children. Although William was trained in science, chose medicine as his vocation, and did his first professional work in psychology, he could find in science no satisfactory answer to man's deepest and most pervasive religious needs; nor could William find in his father's theological views a solution to the problem of evil, of

why men suffer. This, then, was William's "moral business": to choose the side of positivism, Utilitarian ethics, and perhaps atheistic materialism, or, letting his scientific conscience go, choose to believe that the inner core of the universe was meaningful and friendly to man's highest aspirations.

James worked out his solution to this dilemma in a series of well-defined stages. From 1870 to 1874, largely under the influence of Chauncey Wright and the "Metaphysical Club," and in growing opposition to Wright's metaphysical neutralism, James attempted to work out a system of Hamiltonian realism which would mediate between the twin evils, as he saw them, of positivism and idealism. After 1874, with his health much improved, James began regular teaching at Harvard, and broke away from Wright to the extent of advocating the "will to believe," man's right to choose those beliefs which satisfied his deepest aspirations, on the ground that all beliefs are selected by man's interests, and that some beliefs, if not all, carry with them their own verification.

Finally, in a group of articles published from 1878 to 1881, James set forth, in what was to have been his first book on "the sentiment of rationality," an explicit solution to his "moral problem," in the form of a realistic theory of essences, coupled with an elaboration of the psychology of the reflex arc. The importance of this theory in James's own thinking can be shown by two statements: (1) "We have thus vindicated against all assailants our title to consider the world as a matter susceptible of rational formulation in the deepest, most inward sense, and not as a disintegrated sand-heap..." (2) "Anything short of God is not rational, anything more than God is not possible."

As soon as he had set forth his views, however, James, desiring as always to give a place to free will, became attracted by the philosophical possibilities of an indeterministic universe, and decided eventually that indeterminism and pluralism were the same thing. This shift of emphasis became evident in 1884 when James, while editing his father's last works, used the idea of pluralism ostensibly to describe the difference between himself and his father, as well as between moralism and religion in general. James was closer to his father than he realized, however, and had solved his inner conflicts to his own satisfaction; the way was now clear for renewed study, a philosophical elaboration of the position which he had reached.

343 pages. \$4.29. MicA54-2107

PHYSICS

PHYSICS, GENERAL

RADIOFREQUENCY SPECTRA OF Li^7F^{19} BY THE MOLECULAR BEAM ELECTRIC RESONANCE METHOD

(Publication No. 8172)

Rubin Braunstein, Ph.D.
Syracuse University, 1954

The nuclear-molecular interactions of Li^7F^{19} were determined by the electric resonance method of molecular beam spectroscopy. From a study of the hyperfine structure of the rotational states $J = 1$ and $J = 2$, the signs and magnitudes of the Li^7 nuclear quadrupole coupling constant, the F^{19} and Li^7 spin-rotation constants and the nuclear magnetic dipole-dipole interaction constant were determined. The internuclear distance was obtained from the latter constant. This is the first determination of this distance for this molecule. The dipole moment squared times the moment of inertia was also determined as well as the vibrational constant ω_e .

In the electric resonance method, linear polar diatomic molecules in rotational states, J , and definite states of space quantization, m_J , are selected by means of inhomogeneous electric fields. Transitions are observed between states with the same value of J but different values of m_J . The lines are observed as a change in the intensity of the refocused beam when the frequency of an oscillating field, which is superposed on a homogeneous static field, is equal to the energy difference between different states of space quantization divided by Planck's constant. The frequency of a rotational Stark line is determined by the value of the homogeneous field.

The $J, m_J \rightarrow J, m_J'$ transitions $2, 0 \rightarrow 2, \pm 2$ and $1, 0 \rightarrow 1, \pm 1$ at strong fields were observed and analysed. Data taken at weak fields were shown to be consistent with the constants calculated from strong fields. The $2, 0 \rightarrow 2, \pm 2$ transitions were observed by a double quantum process using high radiofrequency fields. Under these conditions transitions can be induced which occur at one half the frequency given by the Bohr condition. Such a half frequency transition can be regarded as one in which two quanta are absorbed. These transitions were previously observed at weak fields; the present is the first observation at strong fields. Considerable simplification of the spectra and their subsequent analysis results from the use of the double quantum transitions in this instance. The $2, 0 \rightarrow 2, \pm 2$ transition of Li^6F^{19} was also observed.

The results of the analyses are shown in accompanying tables.

Internal Interactions of Li^7F^{19}

$v = 0$ vibrational state

$$c_2/h = + 32.9 \pm 1.0 \text{ kc/sec}$$

$$c_1/h = + 2.2 \pm 0.6 \text{ kc/sec}$$

$$(eq_1 Q_1)/h = +412 \pm 7 \text{ kc/sec}$$

$$s = \frac{g_1 g_2 (\mu_N)^2}{r^3 h} = + 12.8 \pm 2.0 \text{ kc/sec}$$

$v = 1$ vibrational state

$$c_2/h = + 32.4 \pm 1.0 \text{ kc/sec}$$

$$c_1/h = + 1.8 \pm 0.6 \text{ kc/sec}$$

$$(eq_1 Q_1)/h = +412 \pm 7 \text{ kc/sec}$$

$$s = \frac{g_1 g_2 (\mu_N)^2}{r^3 h} = + 11.3 \pm 2.0 \text{ kc/sec}$$

Subscripts 1 for Li^7
2 for F^{19}

Measured Molecular Constants of Li^7F and Li^6F

$$\text{Li}^7 J=1 (\mu^2 A)_b = 836.8 \pm 1.0 \times 10^{-76} \text{ (cgs units)}$$

$$\text{Li}^7 J=2 (\mu^2 A)_b = 837.3 \pm 1.0 \times 10^{-76} \text{ (cgs units)}$$

average of above:

$$(\mu^2 A)_0 = 837.1 \pm 0.9 \times 10^{-76} \text{ (cgs units)}$$

$$r = 1.50 \pm 0.08 \times 10^{-8} \text{ cms.}$$

$$\mu = 6.6 \pm 0.3 \text{ debye}$$

$$\text{Li}^6 J=2 (\mu^2 A)_b = 747.6 \pm 1.0 \times 10^{-76} \text{ (cgs units)}$$

$$\text{Li}^7 \frac{(\mu^2 A)_1 - (\mu^2 A)_0}{(\mu^2 A)_0} = 4.2 \pm 0.1 \%$$

$$\text{Li}^7 \omega_e = 646 \pm 32 \text{ cm}^{-1}$$

$$\text{Li}^6 \omega_e = 756 \pm 38 \text{ cm}^{-1}$$

Observed Ratios of Li^6F and Li^7F Constants

$$\frac{(\mu^2 A)_0 \text{ Li}^7}{(\mu^2 A)_b \text{ Li}^6} = 1.120 \pm 0.001$$

$$\frac{(\omega_e) \text{ Li}^6}{(\omega_e) \text{ Li}^7} = 1.17 \pm 0.02$$

136 pages. \$1.70. MicA54-2108

THE S MATRIX IN A NON-LOCAL INTERACTION THEORY

(Publication No. 8713)

Carl Ansell Levinson, Ph.D.
Columbia University, 1954

The structure of the S matrix in a non-local interaction theory is investigated and found to resemble the S matrix in local theories to a considerable extent. Various typical matrix elements are computed and the non-local results are compared with the Feynman prescription for them.

A new differential representation of the S matrix is presented and shown to lead to closed form results in certain special cases for local fields.

54 pages. \$1.00. MicA54-2109

THE PREDICTIVE VALIDITY OF A BIOGRAPHICAL INVENTORY

(Publication No. 8722)

Lester Luntz, Ph.D.
Columbia University, 1954

The subjects of this study were 1,269 members of air crews who were undergoing survival training. A Biographical Inventory was administered to all subjects. The purpose of this study was to ascertain whether subjects, distinguished by their performance in training, could also be distinguished by behaviors in their previous life experience.

Items were included which were related to personality traits considered to be important to success in training. The relevant traits were — Familiarity with the Outdoors, Ability to Take It, Cooperation, Independence from Environmental Props, and Leadership.

Discriminations among subjects were made by several criteria — Peer, Instructor, and Self Ratings; but the analysis was based chiefly upon the first of these. Subjects distinctively high or low on the criterion measures were distinguished, and the options were weighted through a contrast of their responses.

The sample was divided into a standardizing group of 854 subjects and a validating group of 415 subjects. The scoring keys were constructed in the first and validated on the second. The product moment r for the urban subjects in the validating group was $+0.35$ (significant at the .001 level); for the rural subjects, the r was $-.06$ (not significant at the .10 level).

It was maintained that the inventory has a useful degree of predictive validity for urban subjects because of the size of the correlation obtained in validation, the comparability of this r with the r 's obtained in the wartime aviation research with a similar technique stressing more clearly relevant experiences, and the discrimination effected between the highs and lows on the criterion. Several factors were indicated to explain the low correlation obtained with the rural Peer key; (1) the Peer Ratings obtained by rural

subjects may have been influenced largely by the fact that they had more familiarity with the outdoors than urban subjects; and thus their Peer criterion scores may have been established largely by this one factor rather than by the totality of their personality characteristics (2) when compared with the Peer criterion scores of the urban subjects, the rural criterion scores had less variability; the possibility of obtaining as high a correlation between criterion and key scores for rural subjects as compared with urban subjects was therefore reduced (3) the possibility was raised that the experiences referred to by the items in the inventory were not as significant for rural subjects as for urban and the inventory might not therefore discriminate as effectively among rural subjects as among urban.

Other factors peculiar to this study which limited the results obtained were: the need to validate a scoring key constructed from the responses of subjects with only high or low criterion scores upon the responses of subjects with the full range of criterion scores; the possible error variance in the assignment of criterion scores; and possible error in the inclusion of items hypothesized to be related to specific personality traits.

More generally, the orientation of the Biographical Inventory as an instrument toward behaviors rather than the causes of those behaviors places limits upon its usefulness. It is extremely doubtful that the Biographical Inventory can appropriately be utilized to appraise the underlying factors which affect personality development. Finally, the possibility of error introduced by inaccurate responses by subjects remains inherent in the instrument.

The standardization data were discussed in terms of a score assigned each item. The item score was derived from a five-point scale which measured the extent to which the weights the options within an item received formed a continuum in accordance with the rationale with which the item was written. The differences in these scores could not be put to a statistical test of significance, and interpretations of these differences were only suggestive.

For the Peer and Instructor criteria Manifestation and Environment items yielded higher scores than Attitude items. Continuum items had higher scores than non-continuum items. The scores obtained with the Peer criterion were more in accordance with the rationale than the scores obtained with the other criteria. The mean scores of the items related to each of the personality traits varied. The items related to Familiarity with the Outdoors had the highest scores; those related to Ability to Take It also had high scores; those related to Cooperation and Leadership had moderate scores; those related to Independence from Environmental Props had the lowest scores.

119 pages. \$1.49. MicA54-2110

SOME REMARKS ON THE QUANTIZATION OF LINEAR SYSTEMS

(Publication No. 8751)

Jerome Kenneth Percus, Ph.D.
Columbia University, 1954

The commutation relations for a general linear system are expressed in a form — the transfer relation — which is intrinsically non-Lagrangian, only the equations of motion being involved. The invariance of these relations and the transformation properties of the constants of motion are readily inferred. The generalized bilinear concomitant, which enters prominently into the transfer relation, is obtained in manifestly covariant form for self-adjoint systems, conditions for consistency established, and application made to multimass systems. Techniques for the inclusion of supplementary conditions are examined and various complex problems considered. The ramifications of internal inconsistency of the commutation relations, and the cure thereof, are discussed, and applied to fields of zero mass. Non self-adjoint systems are treated by several approaches, all of which indicate that such a system can generally be replaced by an equivalent self-adjoint system. The general formulation is utilized for an analysis of eigenvalues and eigenfunctions of complete commuting sets of constants of motion. Conditions for the existence of field quanta of all types are reviewed and a detailed analysis made of the form and physical probability of the quanta which result. Some consequences of the fact that quanta are formed from only half of the states of the original field are investigated.

142 pages. \$1.78. MicA54-2111

PHYSICS, ELECTRONICS AND ELECTRICITY

MICROWAVE PEAK POWER MEASUREMENT TECHNIQUES

(Publication No. 8685)

Rudolf E. Henning, Eng. Sc.D.
Columbia University, 1954

Techniques suitable for direct measurement of peak power at microwave frequencies are analyzed. An approach utilizing a Wollaston wire barretter element, differentiating amplifier, and peak voltage indicator is analyzed in detail. This approach was determined to be the most suitable for general purpose measurements. Further, the construction of measurement equipment, based on this approach, is

discussed, and experimental data verifying the analysis is presented.

This dissertation is divided into the following five sections:

Section I: The need for, and application of direct peak power measurement equipment is discussed in this section. A short discussion of power-frequency and power-time relationships is also included.

Section II: The indirect peak power measurement techniques available at the start of the project are covered here. This section is primarily devoted to the measurement of peak power in terms of average power, and signal envelope characteristics.

Section III: A number of approaches to the problem of direct peak power detection are analyzed in this section. Included are discussions of:

- A. Direct video detection utilizing silicon crystals.
- B. The use of thermal detectors, such as film barretters, Wollaston wire barretters, and thermistors.
- C. The use of ionization phenomena, as observed by either a glow discharge or breakdown.
- D. The use of electrons interacting with a microwave field.
- E. The use of radiation pressure.
- F. Comparison of peak pulse power and c.w. power, followed by c.w. power measurement.

The section concludes with a relative evaluation of these approaches.

Section IV: In this section the use of a Wollaston wire barretter, in conjunction with a video differentiating circuit is analyzed in greater detail. This approach was determined to be most suitable for general purpose measurements. Expressions are derived for second order errors caused by temperature variations, materials employed, high duty cycles, etc. Specific data is furnished for the Sperry Model 821 Barretter. It is shown that for this element only minor errors are introduced by the above factors, when measurements are restricted to power pulses not exceeding 10 to 20 microseconds. Further, the procedure to be followed in design of auxiliary electronic circuits is outlined in this section.

Section V: Experimental verification of the conclusions reached in Section IV is presented here. The results of measurements performed on the Sperry Model 821 Barretter are shown to agree with the conclusions reached. Data from evaluation tests performed on direct-reading peak power measurement equipment, designed in accordance with the outline furnished in Section IV, is shown to have resulted in satisfactory measurement equipment.

It is concluded that a technique suitable for direct, general-purpose measurement of peak power at microwave frequencies has been developed.

219 pages. \$2.74. MicA54-2112

PHYSICS, NUCLEAR

ELIMINATION OF THE PAIR INTERACTION
IN THE PSEUDOSCALAR MESON THEORY
AND ITS APPLICATION TO THE CLASSICAL
CALCULATION OF NUCLEON ISOBARIC ENERGY

(Publication No. 8342)

Cheng-Hsiu Chang, Ph.D.
University of Washington, 1954

The pair interaction is eliminated from a Hamiltonian of pseudoscalar symmetric meson theory with an extended source (not extended interaction). The result is an equivalent Hamiltonian with pseudovector interaction only, but with a renormalized coupling constant and modified source function. The scattering phase shifts are the sum of the shifts due to the core alone and those of the equivalent pseudovector interaction. The modified source shape is examined in detail in the case in which the original source is square; some effects of the change in shape are briefly discussed.

The above result is applied to the classical calculation of nucleon isobar energy for several core strengths and for a square source function of several sizes. In this particular calculation the effect of the change of the source shape is given approximately by a further renormalization of the coupling constant. This renormalization factor is very close to unity and is approximately independent of the source sizes. The classical excitation energies of isobars in the moderate coupling region are in strong disagreement with the quantum mechanical results. This serves as a warning against taking too seriously other classical results in the moderate coupling range.

106 pages. \$1.33. MicA54-2113

THE PHOTOPRODUCTION OF MESONS
IN DEUTERIUM

(Publication No. 8784)

John Emerson Chappelear, Ph.D.
Indiana University, 1954

The problem of photomeson production in deuterium has been treated many times before. These treatments were phenomenological, using the impulse approximation. They neglected the possibility that the photo-produced meson might interact with the second nucleon in the deuteron. Repeated secondary interactions such as this are of course possible. Since the meson-nucleon coupling is known to be quite strong, it is expected that this interaction will lead to a considerable modification of the cross section for photo-production.

Qualitatively this can be seen as follows. The solution of the Schroedinger equation for the scattering problem is

$$\psi = \phi + \frac{1}{E - H_0 + i\epsilon} T \phi_0$$

This is roughly,

$$\psi = \phi + \alpha e^{iqr/r}$$

So the scattered amplitude at nucleon 2 is, at a distance of about the radius of the deuteron,

$$\frac{e^{iqR_D}}{R_D}$$

When $\alpha \approx 3 \kappa \sin J e^{iJ} \approx R_D \approx \frac{2.5}{\mu}$ as happens at

moderate meson energies, the order of magnitude of this term relative to the incident wave is approximately one. Thus it is not permissible to neglect multiple scattering.

We have attempted to improve the calculations by including a treatment of multiple scattering. We also used an interaction Hamiltonian which yields a $(2 + 3 \sin^2 J)$ distribution in the center of mass system for neutral meson production. The basis for choosing this interaction Hamiltonian is the assumption that neutral meson production takes place in the state with $J=3/2$ and $I=3/2$; the distribution predicted seems to be in accord with experiment. Following this model we assumed that the scattering also had a resonance in this state. We have attempted to fit the experimental data by using the measured transition amplitudes for photoproduction and scattering in hydrogen. Thus the experiments determine all the parameters of the calculation. It will be seen that the nature of one of the approximations made (namely the neglect of scattering of the energy shell) is such as to lead us to expect only qualitative agreement with experiment. There are several reasons for this neglect. First, the present state of the meson theory does not allow reliable predictions of the behavior of the scattering amplitudes off the energy shell. Since our treatment is phenomenological, it seemed best to omit this type of calculation. Second, the difficulties of solving the multiple scattering problem including virtual mesons are considerable, since the numerical solution of coupled integral equations is required. Finally, there is some reason to believe that the range of the corrections due to virtual scatterings is not as large as the range of the corrections due to multiple scattering of real mesons which we have considered. Thus our results may give a fairly good estimate of the corrections to the simplest form of the impulse approximation.

The procedure for the calculation was quite straightforward. A formal solution to the Schroedinger equation for the problem was constructed by the method of Lippmann and Schwinger. Approximations which are similar to the impulse approximation were made to simplify the result. The formal solution was evaluated in terms of the known expressions for the operators which were involved. The difficulty associated with the construction of inverse operators was avoided by writing down the integral equations which the operators themselves satisfied. Then after an approximate solution to the integral equation was obtained, it was found possible to re-invert the operator algebraically. The transition operator was then known and the cross sections were then computed.

The following model was assumed. π^0 mesons were assumed to be produced in P states, and π^\pm mesons were assumed to be produced in S and P states. Furthermore scattering was assumed to take place in P states. Then the elastic differential cross section was computed for photo-production of π^0 mesons. From these results it was also easy to obtain the usual impulse approximation to the cross section, so that the effects of the multiple scattering could be readily seen. The results were that for gamma rays of energies of 285 Mev and 345 Mev the cross section was depressed roughly by a factor of two at all angles and at both energies.

62 pages. \$1.00. MicA54-2114

ANGULAR CORRELATION MEASUREMENTS OF Te^{121} AND Te^{123}

(Publication No. 8547)

Norman Goldberg, Ph.D.
University of Pennsylvania, 1954

Supervisor: Sherman Frankel

Measurements of the angular correlations of the two step transition in Te^{121} and Te^{123} have been made using a thin source ($<1 \mu\text{g}/\text{cm}^2$). The following cascades were investigated in both isomers: 1) K conversion electron - gamma, 2) L conversion electron - gamma, and 3) K conversion electron - K conversion electron. A thin lens beta spectrometer was used as a fixed detector and a crystal scintillator mounted on a photo-multiplier tube for the moveable detector. The complete separation of the K electrons by the spectrometer permitted direct comparison of the results with the well-founded theoretical predictions, which has not been possible in previous correlation measurements involving conversion electrons. The measured correlation was found to be of the form $1 + a_2 P_2(\cos \theta)$ which is the theoretically predicted angular distribution for the known spin sequence in the tellurium isomers ($11/2 \rightarrow 3/2 \rightarrow 1/2$). The measured values of a_2 , corrected for the finite solid angle of the detectors, are $-.015 \pm .007$, $-.007 \pm .007$, and $-.10 \pm .04$ for the K electron - gamma, L electron - gamma and K electron - K electron cascades in Te^{121} and $-.097 \pm .004$, $-.092 \pm .009$, $-.07 \pm .03$ for the K electron - gamma, L electron - gamma, and K electron - K electron cascades in Te^{123} . The K electron - gamma results show that the second transition is a mixture of $5.6 \pm .5\%$ E2 and 94.4% M1 in Te^{121} and $1.3 \pm .1\%$ E2 and 98.7% M1 in Te^{123} ; the phase factor is 0 in both isomers. The expected K electron - K electron correlation for these mixtures is $-.0655$ and $-.0455$ for Te^{121} and Te^{123} respectively. The K electron - K electron data do not yield an independent accurate value of the mixture ratio because of the large probable error of the results, and the insensitivity of the K electron - K electron correlation to the mixture ratio at the particular mixtures determined from the K electron - gamma measurements. However, the

results are entirely consistent in both cases. The results of the L electron - gamma permit us to find the value of b_2 (the number which multiplies a_2 to convert it into the proper value when one of the detected particles is an electron) for conversion of first transition in the L shell. These b_2 for the L shell have not been computed. The value should be about the same for both isomers. Large probable errors in the Te^{121} L electron - gamma measurements only permit us to say that the results were consistent. The value of b_2 from the Te^{123} data is $1.0 \pm .1$. Measurements of the K/L ratio of the 159 KEV transition in Te^{123} and the 214 KEV transition in Te^{121} yielded 8.7 and 7.5 respectively. Comparison of these ratios with empirical curves indicate the fraction of E2 is larger in Te^{121} than in Te^{123} in agreement with the results from the correlation measurements. Many considerations are discussed which lead to the conclusion that reduction of the correlation by some perturbation of the intermediate state or scattering of the conversion electrons is negligible. The square of the matrix element for E2 transitions in Te^{123} , as derived from our results, was four times as large as the prediction of the Weisskopf estimate, which is notoriously generous. The estimated enhancement is about twice as much in Te^{121} . If we use the Weisskopf formula as modified for odd neutron nuclei by Moszkowski, we find that the enhancement is larger than 10^5 . This is definite indication that the single particle model does not apply to these E2 transitions.

76 pages. \$1.00. MicA54-2115

SCATTERING OF 151 AND 188 MEV POSITIVE PIONS BY PROTONS

(Publication No. 8690)

George Homa, Ph.D.
Columbia University, 1954

A beam of ~ 200 Mev π^+ mesons was defined inside the vacuum chamber of the Nevis Cyclotron. Nuclear emulsions were exposed to a flux of about 10^4 mesons/ cm^2 . The plates were scanned for pion-hydrogen scatterings and 103 such events were observed in two interaction energies, 151 ± 7 Mev and 188 ± 8 Mev. We obtain total cross sections of 152 ± 31 and $159 \pm 34 \times 10^{-27} \text{ cm}^2$ respectively. The data suggests that the angular distribution changes from backwards peaked to almost symmetric over this energy interval. Our observations do not confirm the hypothesis of a $P_{3/2}$ -wave resonance in this energy region. The best fit to the combined results includes a D-wave contribution of -5° although satisfactory agreement may be obtained with only S and P waves.

60 pages. \$1.00. MicA54-2116

APPLICATIONS OF THE METHOD OF TENSOR OPERATORS TO ELECTRON INTERACTIONS IN ATOMIC SYSTEMS

(Publication No. 8555)

Frederick Rush Innes, Ph.D.
University of Pennsylvania, 1954

Supervisor: C. W. Ufford

A treatment is given of four of the interactions which may occur within systems of electrons (or nucleons). Comparatively little attention is required for two of these, the electrostatic and spin-orbit interactions, since adequate means of handling them have been worked out already. The development of the other two interactions, the spin-other-orbit and spin-spin, is considered in detail.

The method of treatment consists of an expansion of the interactions into sums of products of irreducible tensor operators in the angular and spin variables and appropriate radial factors. The irreducible operators may be composite in two particles and also composite in each of two particles separately. They are built up of single-particle operators of three types, the spherical harmonic and angular momentum operators in the orbital space (C-tensors and Y -tensors), and angular momentum (spin) operators in the spin space (s-tensors). For groups of equivalent particles, sums of such operators are taken.

Matrix elements of these composite operators are expressed in a form suitable for computation. In particular, elements of wave functions for n equivalent electrons are given for operators composite in both the orbital and spin spaces. The formulas allow computation of the elements of the various interactions in terms of W-coefficients and algebraic factors.

The tensor operators which occur in the electrostatic interaction are essentially scalar products of C-tensors. Means of finding the elements are given by E. U. Condon and G. H. Shortley and by G. Racah. New results consist in an equation for the matrix elements in configurations of equivalent electrons. The spin-orbit interaction, which is essentially the scalar product of an s-vector and an Y -vector, has received definitive treatment in the writings of the above authors.

The spin-other-orbit interaction consists of scalar products of spin tensors of rank one and composite angular operators. These are five in number, for the most general case, namely $\{C_i^{(t)} Y_j^{(t+1)}\}^{(1)}$, $\{C_i^{(t+2)} Y_j^{(t+1)}\}^{(1)}$, $\{C_i^{(t)} C_j^{(t)}\}^{(1)}$, $\{C_i^{(t+2)} C_j^{(t+2)}\}^{(1)}$, and $\{C_i^{(t+1)} C_j^{(t+1)}\}^{(1)}$. However, the last three of these combine to zero in the matrix elements, if the wave functions are both of the same configuration. Some of these elements have been computed and compared with available prior work. Those for the configuration d^2 are given explicitly.

The spin-spin interaction consists essentially of scalar products of composite tensors of rank two. A typical such operator is $\{s_i^{(1)} s_j^{(1)}\}^{(2)} \cdot \{C_i^{(t)} C_j^{(t+2)}\}^{(2)}$.

The simplicity of the result is characteristic of the atomic potential (the radial dependence of classical multipole theory) and does not obtain for the nuclear problem.

Consideration is also given to other related subjects, such as the various definitions of irreducible tensors (particularly the commutation relations of Racah), a method of deriving the matrix elements of composite operators which is new in some respects, and the connection between the radial integrals of the spin-other-orbit interaction, along lines first laid down by H. H. Marvin.

143 pages. \$1.79. MicA54-2117

INTERNAL PAIR PRODUCTION OF GAMMA RAYS FROM π -ABSORPTION

(Publication No. 8717)

Peter Lindenfeld, Ph.D.
Columbia University, 1954

Two processes are known to occur when negative π -mesons are absorbed in hydrogen, namely (I) $\pi^- + p \rightarrow n + \pi^0$, $\pi^0 \rightarrow 2\gamma$ and (II) $\pi^- + p \rightarrow n + \gamma$. A search has been made for the alternative processes (III) $\pi^- + p \rightarrow n + \pi^0$, $\pi^0 \rightarrow \gamma + e^+ + e^-$, (IV) $\pi^- + p \rightarrow n + e^+ + e^-$, and (V) $\pi^- + p \rightarrow n + \pi^0$, $\pi^0 \rightarrow e^+ + e^-$. The processes (III) and (IV) were found to be present. The ratio of electron pairs from processes (III) and (IV) to γ -rays from processes (I) and (II) was determined to be 0.0090 ± 0.0031 . The ratio of pairs from process (III) to γ -rays from process (I) was determined to be 0.0059 ± 0.0035 . No evidence could be detected for the presence of process (V). An upper limit for the ratio between electrons from process (V) to γ -rays from process (I) was set at 0.0006.

40 pages. \$1.00. MicA54-2118

LEVEL STRUCTURE OF Li^6

(Publication No. 8565)

Donald Herbert Lyons, Ph.D.
University of Pennsylvania, 1954

Supervisor: Dr. A. M. Feingold

The splitting produced by the tensor force of the S and D states of Li^6 has been computed by a variational method which includes the effect of configuration interaction. It is found that the tensor force contributes, on the average, about 12 Mev. to the binding energy, the major part coming from excited configurations. In addition, the 3D states are split in essentially the same manner as would result from a vector type force in first order. A total multiplet splitting of about 5 Mev. is obtained, with the 3D_3 state lowest. The tensor force also separates the 1S_0 and 3S_1 states and the 1D_2 from all 3D states, giving a final level structure for Li^6 in qualitative agreement with the known experimental data.

96 pages. \$1.20. MicA54-2119

PHYSIOLOGY

EFFECTS OF TRAUMA AND STRESS ON TISSUE SULFHYDRYL

(Publication No. 8902)

Wayne Henry Linkenheimer, Ph.D.
University of Pittsburgh, 1954

Introduction

This investigation deals with a comparison of the concentrations of sulfhydryl compounds occurring in the liver and certain other tissues of: (a) control mice or rats, (b) mice or rats which had been subjected to certain shock and/or stress-producing procedures. These shock and/or stress-producing procedures have included: scalding; tourniquet trauma; tumbling trauma; severe hemorrhage; severe anoxia; severe cold; and toxic amounts of certain substances administered parenterally, e.g., potassium chloride, histamine, and a tumor-necrotizing bacterial polysaccharide.

Materials and Methods

The animals used throughout this study were male and female mice, and male and female rats.

Tissue extracts were made from fresh or frozen tissues with: (a) isotonic potassium phosphate buffer of pH 6.8, for estimation of total tissue sulfhydryl, or (b) sulfosalicylic acid 2.2 or 4 per cent, or metaphosphoric acid (2 per cent in saturated sodium chloride), for estimation of nonprotein sulfhydryl.

Nonprotein sulfhydryl in the acid extract was estimated by the amperometric titration method or by the colorimetric nitroprusside method. Total sulfhydryl in the phosphate buffer extracts was estimated by the amperometric method. Total protein was estimated by the Biuret method.

The methods used for inducing burn, traumatic, and hemorrhagic shock were standardized methods found in the literature. Other animal procedures were devised as the need for them became evident.

Experiments, designed to test a possible action of injections of sodium glutathionate in enhancing survival of traumatized animals, were carried out by making one or more injections of isotonic sodium chloride into animals of one traumatized group, and a similar series of injections of isotonic sodium glutathionate into comparable animals in another traumatized group, either before or after traumatization.

Summary

A significant decrease in liver nonprotein sulfhydryl concentration occurred in the mouse after subsection to burn scalding, ligation trauma, injections of a toxic bacterial polysaccharide, and exposure to severe cold.

Decrease in the concentration of liver, kidney, and heart nonprotein sulfhydryl occurred in rats which had been scalded, bled, or tumbled. The greatest changes noted occurred in the liver.

Scalded rats exhibited an increase in blood nonprotein sulfhydryl concentration, paralleled by an equal hemoconcentration, i.e., scalding apparently did not induce an appreciable change in the concentration of such compounds in the red cells.

No significant differences were noted between experimental and control animals, in respect to either amounts of protein or of protein sulfhydryl extractable from liver, regardless of the traumatizing or stress procedure employed.

Mice which had been exposed to anoxic conditions for six hours exhibited a slight decrease in nonprotein sulfhydryl. However, the decrease was not statistically significant. Mice which had been injected with histamine did not exhibit any apparent decrease in liver nonprotein sulfhydryl, except when a prostrating dose was administered.

No significant difference was noted in the survival of isotonic sodium glutathionate-injected animals, as compared with isotonic sodium chloride-injected animals, in experiments with scalded mice, and in experiments with rats subjected to tumbling trauma.

The increase in tissue concentration of nonprotein sulfhydryl achieved by intraperitoneal injections of very large amounts of sodium glutathionate, lasted only a few hours. For the tissues analyzed (liver, kidney, heart, and blood), rate of disappearance was most rapid from the liver, slowest from the kidney. Tumbling trauma resulted in a slower rate of disappearance of nonprotein sulfhydryl from the heart, blood, and kidney, but a much more rapid rate of disappearance of nonprotein sulfhydryl from the liver.

Discussion

The literature states that adenosine triphosphate concentration is decreased in the liver when shock has been induced. It also has been reported that adenosine triphosphate is necessary for the synthesis of glutathione, the main constituent of liver nonprotein sulfhydryl. It might therefore, be possible that the decrease in nonprotein sulfhydryl, which has been reported in this paper, is a result of a decreased rate of synthesis of glutathione because of decreased amounts of adenosine triphosphate present in the liver in the event of induced trauma.

107 pages. \$1.34. MicA54-2120

THE INFLUENCE OF PARTICLE SIZE UPON THE RETENTION OF INHALED PARTICULATE MATTER IN THE LUNGS OF GUINEA PIGS AND MONKEYS

(Publication No. 8908)

Paul Eugene Palm, Ph.D.
University of Pittsburgh, 1954

The purpose of the investigation is to compare the influence of particle size upon the retention of inhaled

particulate matter in the respiratory system of guinea pigs and monkeys with similar values previously obtained by the same method on humans.

To effect this comparison, 83 guinea pigs and 10 monkeys of various weights and sexes were subjected to a total of 157 dust inhalation experiments to determine the influence of particle size upon the retention of dust in lungs, as distinct from upper respiratory retention. Particle sizes, to which the animals were exposed, ranged from the submicroscopic region of 0.064 to 5.0 microns, each fraction being of a relatively homogeneous nature.

Earlier investigators using animals either failed to realize the importance of lung retention as distinguished from overall retention or were limited in their experimental techniques and hence were not successful in identifying the two.

A new apparatus and technique for small animals was used which permits the serial separation of each exhalation into three reproducible fractions. The carbon dioxide content of each fraction was related to the lung CO_2 , thereby permitting calculations to be made of the portion of true lung air in each fraction as distinct from upper respiratory air. These calculations, together with the measured dust concentration in each exhaled fraction, permit dust retention in the upper respiratory tract to be distinguished from alveolar deposition. The overall retention is determined from the difference between total dust inhaled and exhaled.

RESULTS OF THE STUDY

1. Certain generalizations are drawn concerning retention characteristics of the three species, guinea pig, monkey, and man:

a. The smaller the test animal, the greater is the upper respiratory retention for a given particle size. The increased retention is believed to be the effect of normal impingement of particles in smaller air passageways, which, in turn, results in a greater overall retention.

b. The percentage retention of dust which reaches the lungs varies but little among the species represented.

c. The percentage of inhaled dust deposited in the lungs decreases with decreasing animal size. This calculated "AP" value is largely predetermined by the upper respiratory retention.

d. For all species tested, there is a particular particle size to which the animal is especially sensitive and for which alveolar deposition is greatest.

2. Particle size is shown to be an extremely important factor in deciding the fate of inhaled particles since it largely determines the depth of penetration and percentage retention in the respiratory system of guinea pigs and monkeys. For mineral particles, the optimum size for alveolar deposition in the animals tested is slightly less than one micron.

3. The clearance rate for one micron diameter antimony trioxide particles from the upper respiratory tract of guinea pigs is determined and a six-hour holding period is shown to be necessary for clearance

of the smaller bronchioles properly chargeable to the upper respiratory tract. To compare the retention of this material in animals with retention of clay particles in humans, the 1.46 micron specific dynamic equivalent size is used.

4. A comparison of the quantity of dust directly recovered from the guinea pig respiratory system with retention values indirectly calculated on the basis of end-normal-exhalation CO_2 concentrations demonstrates that the indirect method produces acceptable retention values.

108 pages. \$1.35. MicA54-2121

HAND BLOOD FLOW IN YOUNG AND OLD ADULTS DURING STANDARDIZED THERMAL EXPOSURES

(Publication No. 8914)

Jacob Elmer Wiebers, Ph.D.
University of Pittsburgh, 1954

The objective is to provide quantitative information on cutaneous vascular responses of persons subjected to a fixed sequence of exposure to cold and heat, and to ascertain the extent to which these responses change with age.

Sixteen young (19 to 30 years), and 16 old (60 to 70 years), healthy, adult males served as subjects in a program which consisted of (a) a cardiovascular medical examination, and (b) a single two-hour exposure in a controlled thermal environment. An air-filled plethysmograph was developed to permit rapid and simple assessment of hand blood flow by the venous occlusion technique. The thermal exposure began with a preparatory period at 80° F., following which the temperature was lowered at the rate of 0.5° F. per minute until the subject felt "uncomfortably cool"; the temperature was then stabilized for 15 minutes, raised to 80° F., stabilized for 27 minutes, raised to 90° F., and stabilized for 27 minutes. Blood flow data collected during different parts of the exposure were compared, using appropriate statistical procedures.

The principal results are summarized below:

1. At least 11 kinds of vascular responses were observed during the routine thermal exposures. Only 14 of the 32 subjects showed the response which is consistent with the classical concept of cutaneous vasomotor regulation of body temperature; i.e., vasoconstriction in the cold; vasodilatation at 80° F.; and further vasodilatation at 90° F. Some of the other subjects exhibited an increase in flow in the cold and/or a decrease in the heat. Four subjects actually showed no significant response to either cold or heat. Almost all kinds of responses were represented among both young and old subjects.

2. Large differences in successive values for hand blood flow (obtained at half-minute intervals) were attributed to actual periodic changes in flow rate. These are believed to be the result of continuous

alterations in vasomotor tone (affecting the lumen of the vessels), and the opening and closing of the arterio-venous anastomoses.

3. Quantitative aspects of the response of young and old groups are summarized here.

4. For the old subjects no correlation was found between various indices of the kind of hand blood flow response, or amount of hand blood flow, and the results of a cardiovascular medical examination. Nor was there any correlation between the index

Comparison	Young	Old
Thermal sensation (average) first report of "uncomfortably cool" 80° F. 90° F.	69° F. "neutral" "uncomfortably warm"	69° F. "neutral" "uncomfortably warm"
Blood flow* (all periods combined) average range	11.3 5.5 to 22.8	9.6 6.1 to 16.8
Minimum blood flows observed average range	1.8 0.0 to 5.3	1.9 0.5 to 4.3
Maximum blood flows observed average range	23.6 16.9 to 46.8	20.6 10.6 to 30.0
Range of adjustment by periods average extremes	7.0 1.9 to 15.4	7.3 2.3 to 17.8

*All blood flows are in cubic centimeters per minute per 100 cubic centimeters of hand.

The thermal sensations of the 32 subjects indicate that the objective of imposing both cold and heat stresses was met. The wide variation of flow rates observed for different individuals of each age group, and the similarity of data on the two age groups is apparent. The only exception to this is that the overall average flow of the old group was significantly lower.

values for the old and young groups.

5. This investigation of hand blood flow responses to moderate thermal stresses indicates that this particular approach will not be of any great value for measuring the overall cardiovascular status of the individual.

115 pages. \$1.44. MicA54-2122

POLITICAL SCIENCE

POLITICAL SCIENCE, GENERAL

MINOR PARTIES IN CANADIAN NATIONAL POLITICS, 1867-1940

(Publication No. 8554)

George Millard Hougham, Ph. D.
University of Pennsylvania, 1954

Supervisor: J. Perry Horlacher

This study analyzes the background and formative influences, the evolution and electoral record of six minor parties in Canadian national politics. Within this context, particular attention is paid to the features of party organization, leadership and platform, to the problems of internal unity, community support and inter-party relationships.

In Chapter I, the steps in the establishment of Canada's major parties before and after Confederation (1867) are traced and the character of these parties is explored. Canada's major parties conform, in large measure, to the North American tradition. In terms of race and religion, economic interest and class, Canada is a heterogeneous community. Consequently, the successful major party must emphasize compromise and conciliation and avoid doctrinal disputes and ideological commitments.

In succeeding chapters, the history of the Canada First party, the Patrons of Industry and the Nationalist movement, the Progressive party, the Cooperative Commonwealth Federation and the Social Credit party is outlined and analyzed. A separate chapter is devoted to a survey of the impact of the Great Depression on the Canadian party system.

The Canada First party in English Canada and the Nationalists in French Canada sought the same thing at different times - the development and implementation of national policies in conformity with Canadian self-interest and autonomy. The remaining parties mentioned above were primarily interested in economic issues. Though the Cooperative Commonwealth Federation and the Social Credit party were more doctrinaire in program than the Patrons of Industry and the Progressives, each of these parties was also agrarian in origin.

Among all six minor parties, a number of common characteristics were evident. Although not to the same extent in each case, the party supporters were in every instance suspicious of "partyism," i.e., of those practices and procedures of party and parliamentary government which, they felt, were resulting in a frustration of the popular will. This attitude was reflected in the evident reluctance with which, in every instance but one, the transition from movement to party was made. It was also variously reflected in an emphasis on rigid respect for the party's principles

and program, in intolerance of any action which smacked of compromise or political bargaining and in a variety of proposals for changes in the conventions of parliamentary democracy.

At the same time, the history of Canada's minor parties indicates that distrust of partyism led directly to the most difficult problem which confronted the followers of each minor party. Manifest in a number of different ways, the crucial question for the supporters of each minor party was how they could secure acceptance of their principles and program without competing with the major parties for power. And if the pursuit of power was necessary, how could they protect the purity of their movement and principles; how, in other words, could the minor party compete with the major parties without, in the process, becoming indistinguishable from them.

Despite this problem, it may be noted, minor parties have in recent decades become firmly entrenched in Canadian politics. A survey of the effect of this development on the major parties and the parliamentary system is included in the final chapter of the study.

314 pages. \$3.93. MicA54-2123

THE MAKING OF ISRAEL'S CONSTITUTION: (1948-1951)

(Publication No. 8763)

Emanuel Rackman, Ph. D.
Columbia University, 1953

Israel has a constitution - even though no specific instrument is thus entitled. This study purports to describe the making of that constitution in the first three years of the existence of the state. The three years include the period of the Provisional Government and the period of the First Kneset, which was the popularly elected Constituent Assembly that changed its own status into that of a legislature.

If the Constituent Assembly had prepared and approved a formal constitution, perhaps all the pertinent data could best have been reported with relation to its specific articles and sections. In the absence of such a text, however, it was necessary to resort to a different method of organization.

The method chosen was to describe historically and functionally the several elements of which Israel's constitution is a composite. The constitutional pattern before independence was one of the most important of these elements. For example, the electoral system of the new state grew organically out of the electoral system of the Kneset Israel - the organization of the Jewish community of Palestine. That is why constitutional antecedents are discussed in

Chapter One. The prospect, however, of statehood and the projecting of a written constitution by the United Nations General Assembly Resolution of November 29th, 1947, stimulated considerable thought and literary activity with regard to such an instrument. This thought and literary activity did influence the constitution in the making as it may yet influence future constitutional development. Therefore, the views of the political parties in Israel with regard to the constitution are fully discussed, with only so much of the parties' historical background and general ideology as is necessary to understand their views on the constitution.

Several draft constitutions were also prepared, one of which - that of Dr. Leo Kohn - was fully discussed in Israel and abroad. Furthermore, a committee of the State Council of the Provisional Government actually prepared several chapters of a proposed constitution for use by the Constituent Assembly. This committee, over a period of several months, debated the Kohn draft as well as the proposals of its own expert - Prof. A. Vitta. Where this thought and literary activity have already influenced constitutional patterns is specified; the remainder is reported for its possible bearing on later constitutional history.

Important constitutional patterns, however, emerged from the Provisional Government and State Council. The First Kneset added more. These patterns, principles, and procedures were in effect the constitution of the period under discussion. They are described not only with reference to the relevant ordinances and laws but also with reference to the literature which had developed in the political party organs and the committee on the constitution of the State Council of the Provisional Government.

After six chapters of background material, Chapter Seven attempts to describe the government from a functional point of view. The law-making process is outlined with particular attention to the role of the legislative and executive authorities. The relationship between these two authorities is then discussed with regard to treaty-making and the budget. While the Arab problem is presented in several later chapters, the role of Arabs in the over-all functioning of the state is here indicated. Procedure in the Kneset and administration in the Government are also described, as well as the office of president and the office of comptroller.

The First Kneset, in addition to contributing materially to constitutional development, also approved a resolution with regard to a written constitution. The debate on this subject as well as the resolution finally approved are discussed in Chapter Eight for whatever significance they may have for future constitutional development. The debate, however, brought into sharp focus some of the most important constitutional problems which are analyzed in the four succeeding chapters. These chapters cover most of the issues on which the political parties have the most divergent points of view and whatever progress is being made in the direction of their resolution is described.

The discussion of the judiciary is reserved for

the chapter dealing with religion in the state. Similarly, the status of the armed forces is reserved for the chapter on the territorial problem.

260 pages. \$3.25. MicA54-2124

POLITICAL SCIENCE, INTERNATIONAL LAW AND RELATIONS

THE BERLIN BLOCKADE: STUDY OF A POPULATION UNDER STRESS

(Publication No. 8644)

Walter Phillips Davison, Ph. D.
Columbia University, 1954

This study describes the principal events in Berlin during the blockade of 1948-49, and attempts to explain why West Berlin was able to hold out.

Part One is devoted to an historical review of the blockade period, based largely on the Berlin press. In June 1948, Soviet authorities closed overland channels of communication between West Germany and Berlin, making it clear that they intended to force the United States, Great Britain and France out of the four-power city by preventing them from supplying their sectors. Simultaneously, by a variety of threats and promises, the Soviets tried to persuade Berlin's German government and populace to follow Soviet orders and to disregard those of the western powers. People who were willing to register in East Berlin were promised food, fuel and employment.

In spite of the militarily indefensible position of West Berlin, both the Germans and the western powers resisted Soviet encroachment. The allies instituted an airlift, which proved able to supply the city on a minimum basis. German municipal authorities showed great personal courage in refusing to obey those Soviet orders which they considered illegal. West Berliners in general showed their resistance by refusing to register for food or employment in the Soviet sector; by enduring dull food, unheated homes, and stringent cooking and lighting restrictions; and by enthusiastically supporting the city's democratic leaders. After it became apparent that the blockade would not succeed in driving out the western powers or breaking the resistance of the Berliners, the Soviets split their sector from the rest of the city and established a separate government there. The blockade was lifted in May 1949.

Part Two presents the thesis that West Berlin was able to hold out because the airlift provided material necessities; democratic German leaders were able to control basic political institutions; and the population supported these leaders and resisted Soviet threats and promises. If any one of these three conditions had not held true, West Berlin would have fallen. Part Two is based largely on interviews with prominent West Berliners, opinion surveys, and 342 essays in which Berliners described their blockade experiences.

Berlin's democratic leaders were able to wrest control of the city administration and West Berlin's trade unions from the communists, and to build political parties free of Soviet domination, in the years following World War II. When the blockade came, these leaders were already committed to resisting Soviet pressure, and their control of the major political institutions made it impossible for the Soviets or German communists to seize power without large-scale use of violence.

The population's resolute behavior is explained by strong anti-communist attitudes resulting from Soviet excesses in 1945, identification with the West, and the conviction that resistance would benefit Germany and serve the ideals of justice and democracy. Primary groups were strengthened during the blockade, and group support helped many individuals bear cold, darkness, and the monotonous diet. Other important supporting influences were the admiration which Berliners received from the free world, the hope of economic prosperity after the blockade was over, and the symbolic meanings of the airlift planes. A critical morale situation existed in West Berlin when the blockade was first imposed. People expected the Soviet design to succeed because they doubted the determination of the western powers and did not see how the west sectors could be supplied. The rapid development of the airlift, however, banished both these doubts and brought more favorable expectations.

570 pages. \$7.13. MicA54-2125

AN INTRODUCTION TO STRATEGIC INTELLIGENCE WITH A CLASSIFICATION SYSTEM FOR STRATEGIC INTELLIGENCE SOURCE MATERIALS

(Publication No. 8949)

George Bell Dyer, Ph. D.
and

Charlotte Leavitt Dyer, Ph. D.
University of Pennsylvania, 1950

Supervisor: Dr. E. W. Carter

A joint dissertation in Political Science presented to the Faculty of the Graduate School in partial fulfillment of the requirements for degrees of Doctor of Philosophy, 14 June 1950. xix, 561p. Preface, Introduction, Chaps. I-XIII, Apps. A-I, 50 Tables (Table 40 - Index to Classification System).

Purpose of the dissertation is stated in the preface to be an effort to clarify strategic intelligence procedures by the application of social science methodology. Materials for the study were drawn exclusively from sources available to the public. Adequate quantities of information were found in this type of source.

The Introduction stresses the need for scholarly study by social scientists of strategic

intelligence procedures. It cites authorities to suggest the importance of an effective intelligence system to national security, and the costly results of inadequate intelligence. It considers investigations already made and finds a lack of broad studies in the field, also a lack of personnel with both intelligence and social science training.

Chapter I examines the history of two major types of intelligence operations, tactical and strategic, from biblical times to 1900, and finds both types in use since the beginning of history. Modern western organization of intelligence probably began with the British in the late sixteenth century.

Chapter II continues the review of intelligence operations, but after 1900 finds an organizational approach more suitable for the study. After brief mention of the deficient plan of a strategic intelligence report on Mexico in 1822 by an American agent, J. R. Poinsett, it considers the organization of a United States War Department "Notes on China," 1900; an Encyclopaedia Britannica article on Switzerland, c.1910; a British Naval Intelligence Handbook of Greece, 1920, and others. The objectives of strategic intelligence, an accurate estimate of the capabilities and intentions of national rivals, are clarified by this chapter.

Chapter III examines the vocabulary of intelligence practice and finds much confusion in present-day use of terms. It then proposes a list of definitions to begin an agreement on standard usage.

Chapter IV begins the study of general classification systems which, while originally designed to comprehend all knowledge, may also be applied to the clarification of strategic intelligence procedures. The emphasis is on the Dewey Decimal, Cutter, Library of Congress and Brussels systems.

Chapter V examines classification systems fulfilling specific needs, including the War Department Decimal File system, and that of the National Archives, New York Public Library and British Museum.

Chapter VI continues this line of investigation with a study from the strategic intelligence viewpoint of a system of classification for Public Administration materials, and a business library (Columbia).

Chapter VII considers terms used in classifying, cataloging, indexing and filing as they apply to libraries and strategic intelligence offices.

Chapter VIII treats of mechanical aids to libraries and business firms.

Chapter IX examines deficiencies in general classification and related systems from the strategic intelligence viewpoint.

Chapter X analyses the requirements for an effective strategic intelligence organization, and presents the following proposed major headings:

Historical Background of the Given Area
(Temporal Factors)

Geographical Elements of the Area
(Spatial Factors)

Functional Elements of International Power
(Functional)

Geographic and Topographic
Sociological and Demographic
Political

Economic

Scientific and Technological

Defense Establishment

Historical

Bibliographical

Estimate of Intent

Each one of the headings is examined and developed in detail. The problem of the estimate of intent is dismissed as outside the scope of an "introduction" to strategic intelligence.

Chapter XI gives instructions for the operation of the proposed classification system developed from the major headings in the preceding chapter and outlined at length in Chapter XII. (Index to Classification system, Table 40).

Chapter XIII presents the conclusions. The findings of the investigation are summarized, and the need for social scientists to interest themselves in strategic intelligence operations, and for intelligence personnel to study the social sciences is reemphasized.

The Bibliography is divided into (1) specialized bibliographies (2) bound materials (i. e. books) (3) articles in periodicals and magazines. It is 35p long and lists titles in six languages.
459 pages. \$4.74. MicA54-2126

RUSSIA AND GREAT BRITAIN IN IRAN: (1900-1914)

(Publication No. 8743)

Hossein Nazem, Ph. D.
Columbia University, 1954

This paper is a study of Anglo-Russian foreign policy in Iran during 1900-1914. While it deals primarily with Russia and Great Britain, an attempt has been made also to show the attitude of other powers. The survey covers ten chapters, including the conclusion.

The aims of Russia and Great Britain in Iran were not identical. Russia, aside from considerations of

proximity and economic interests, wanted to expand her influence in Iran and thus secure access to India and the warm waters of the Persian Gulf. Great Britain, on the other hand, concerned with the defense of India and her commercial interests in the South, took a defensive attitude and tried to check Russia step by step.

Aside from Russian and British rivalry, there were two hostile forces within Iran, the Royalists and the Nationalists. Up to 1906 Iran had an absolute monarchy. There was no parliamentary system. But after the defeat of Russia by Japan and the introduction of the Duma, the Iranian Nationalists thought the time had come to shake themselves free not only from foreign control but also from the hand of the Shah's agents. Great Britain, alarmed by the increase of Russian influence in Iran, tried to support the Nationalists in order to check the Russians. In 1906, when the Shah refused to grant a constitution, the Nationalists took asylum in the British Legation and forced the Shah to yield on the issue. On August 5, 1906, Mozaffar-ed-Din Shah signed the Magna Carta of Iran and on October 7, 1906, the Majless was officially opened.

In 1907 when the Anglo-Russian Agreement was signed Germany regarded the Russian and British action as a violation of an Open Door policy in Iran. Germany was primarily concerned with the Bagdad Railway. She raised the subject of the Open Door in order to force Russia to come to some agreement with her on the question of the Bagdad Railway. Negotiations between Germany and Russia continued from 1907 to 1911, when the Potsdam Agreement was signed, by which Germany recognized the Russian zone of influence in Iran and in return Russia promised not to oppose the German project in Mesopotamia.

In 1909 Russia, as the result of the siege of Tabriz, sent troops to Iran. While Russia promised Great Britain that the occupation would be temporary, she subsequently refused to withdraw.

Russia not only made deals with Great Britain and Germany, but she also prevented Morgan Shuster from making financial reforms in Iran. The employment of Stokes and Lecoffre by Shuster and the confiscation of Shoa-es-Sultaneh's property caused Russia to send two ultimatums to Iran. When Iran found that Great Britain and the United States would not support her, she decided to yield. The result was that the Majless was closed and Shuster left the country.

Although Great Britain supported Russia in the Shuster episode, it did not mean that she supported Russia entirely. Great Britain did not want Russia to occupy Teheran, and Sir Edward Grey many times urged Russia not to send troops to the capital. Moreover Grey protested against the return of Mohammad Ali, the ex-Shah, and the Russian atrocities in Tabriz and Meshed.

While during 1912-1914 there was harmony between Russia and Great Britain, this harmony disappeared in 1914, when Russian subjects started to buy lands in Iran and the Russian Consuls attempted to collect taxes. The interference of Russia in the

internal affairs of Iran alarmed the British leaders. Sir Edward Grey believed that Russian action in buying land, collecting taxes, and preventing Iran from sending gendarmes to the North had undermined the integrity of that country. But Sazonov disagreed. He contended that Great Britain also had brought territories such as Queit, the Persian Gulf, Afghanistan and Baluchistan under her subjection.

With the rise of tension in Europe, however, Great Britain and Russia decided to reconcile their differences. Grey assured Russia that Great Britain would not undertake any project for exploiting oil in North Iran without prior consultation with the Russian Government. Sazonov also accepted the British demand that Shuja-ed-Dowleh be replaced by another Governor-General. While Sazonov agreed to moderate the Russian action in collecting taxes, he insisted that the Russian troops would not be withdrawn from Iran. Such was the situation at the outbreak of the First World War. 361 pages. \$4.51. MicA54-2127

THE UNITED STATES AND THE PRINCIPLE
OF ABSOLUTE NONINTERVENTION IN
LATIN AMERICA WITH PARTICULAR
REFERENCE TO MEXICO

(Publication No. 8946)

Harry Hersh Shapiro, Ph. D.
University of Pennsylvania, 1949

Supervisor: Dr. Edgar B. Cole

Introduction

The expropriation by Mexico, in 1938, of the petroleum and other properties of nationals of the United States, was the greatest blanket seizure of foreign properties in the American Hemisphere. Mexico acted within the confines of its constitution, which authorized the Mexican Government to seize property on the premise of social necessity. Furthermore, Mexico claimed her activity in this respect was in accordance with accepted precepts of international law. Rather than become intransigently embroiled with Mexico at a period when its own security and that of the Hemisphere necessitated the friendship of the Latin American nations, the United States chose to consider this expropriation as essentially a fait accompli.

The manner in which this expropriation was handled by the United States has raised questions which had lain dormant and unanswered through the war years. The answers to these perplexing problems may have consequences of primary importance to the United States in its dealings with the nations of Latin America at present and in the future.

A "Great State" such as the United States, pledged to absolute nonintervention in Latin America, has now experienced the effects of the expropriatory action of a small nation. It appears that the United States faces a dilemma in Latin America, a choice of action. It must avoid the appearance of unduly influencing the internal or external actions of another

nation by any methods which would be construed as intervention.

This dissertation will examine the definitions and forms of intervention with the purpose of determining the scope of United States intervention in Mexico. The evolution of the nonintervention policy of the United States is considered in relation to the impact the Mexican social reform legislation had upon this policy. Since a major test of nonintervention arose as a result of the Mexican expropriations, this study will examine the bases of the Mexican action and the diplomacy involved in the efforts of the United States to adhere to a policy of absolute nonintervention in meeting this problem. The Mexican expropriations are explored primarily against the background of nonintervention. Concomitant with the problems posed by the adherence of the United States to absolute nonintervention are those which emerged as a result of a movement in Latin America to broaden the base of nonintervention. The problems posed by the pledges of absolute nonintervention at the several inter-American conferences from 1933 to 1948 are studied together with the problems they in turn tended to create. Finally, this study will evaluate the effects that adherence to nonintervention has had upon the position of the United States in inter-American affairs and will consider a newly evolving policy of the United States vis-a-vis Latin America in the light of current political issues.

It has been deemed essential to an understanding of the problem to emphasize that the judgments which will be drawn in this study are based upon the acceptance of standards of international conduct which are part of United States or North American standards. On the other hand, in the use of the word "intervention" the Latin American concept is accepted throughout the dissertation as the bases for determining the commission of an act of intervention.

Conclusions

The essential conflict which exists between the broad interpretation of intervention on the part of the Latin American nations, and the more narrow meaning given the word by the United States, must result in a confusion of terms. Particularly is this the case when it refers to the limits to international action in the event of conflicts between nations which may result in accusations of intervention. The effects of the submission by the United States to the Latin American concept of intervention cannot easily be measured in terms of strategic issues, diplomatic weaknesses, or economic frustrations. Certainly in the Mexican petroleum expropriations the conflict is clearly illustrated.

The Montevideo Conference marked a change in the Latin American policy of the United States. In pledging adherence to a doctrine of nonintervention the United States gave evidence of the beginning of a reorientation of its traditional policy of unilateral action vis-a-vis Latin America. In later conferences the United States signified its willingness to enter into agreements incorporating nonintervention in inter-American affairs and which made

nonintervention a fundamental law of the American Hemisphere. This adherence restricted the United States when it faced the problem of resolving the Mexican expropriations controversies and proved advantageous to Mexico in resolving these difficulties. In the expropriations issues the United States performed acts of diplomatic and political abnegation in an effort to insure the friendship and cooperation of the Latin American nations.

Intervention in Mexico, as well as in other areas of Latin America, had acted to impair the primacy of position which the United States was attempting to develop. However, there appeared to have been dissimilarities of intent between the United States and Latin America with regard to the objectives of the inter-American conferences, particularly concerning nonintervention. These dissimilarities have evidenced themselves in an exaggerated concept of nonintervention, making it so tight as to preclude diplomatic interposition. That was the Latin-American concept. On the other hand, the Latin American nations have interpreted intervention so broadly that the United States, as the "Great State" in the Hemisphere, was compelled to desist in the Mexican seizures from actions which would have been normal procedure in protesting the Mexican actions, prior to the nonintervention protocols. It is to be doubted that the United States ever intended to give up, at any of the inter-American conferences, its traditional position of interesting itself by diplomatic interposition, in the problems of its nationals in Latin America.

The nations of the inter-American system have given evidence of a willingness to consult together for purposes of mutual defense and to prevent the outbreak of war in the Hemisphere. In this connection should be considered the Uruguayan proposal for a pact authorizing collective intervention, in the event of certain threats emanating from within the Hemisphere. It presents certain dangers, particularly that it may be used as a cloak for unilateral intervention. As the dominant power in the American Hemisphere, it is unrealistic to expect the United States to dissipate its obligations to defend the American Continent under the Monroe Doctrine to the several nations which in the first and last analysis will depend upon the United States for that defense. There are some areas of inter-American politics where the majority decision of the Latin American nations has taken precedence over the views of the United States. This the United States has recognized in according *de facto* recognition to those governments which assume actual control of a nation, regardless of the existence of ideological dissimilarities with the United States. The United States gives evidence of pursuing a policy or recognition for the American Continent different from its policy of recognition in other areas of the world. *De facto* recognition of recent governments in Latin America has brought with it a serious weakening of the inter-American structure. The new governments, in most cases, have been reactionary. Those civil liberties for which the United States traditionally stands are now in process of nullification in those areas. Much of the hard work of the inter-American conferences from 1933 to 1948 are in

danger of dissipation if the thin bulwark of democratic government in Latin America is crushed by military tyrannies.

Nonintervention in all of its facets is evidence of the triumph of Latin American diplomacy within the past fifteen years. At the same time the acceptance by the United States of this doctrine for its policy in the American Hemisphere gives proof of the basic maturation of United States diplomacy. Nonintervention, however, is not to be weakened by international irresponsibility. Where the latter threatens, then collective intervention should be seriously considered as a means of bolstering the sagging solidarity of the American system. Collective intervention, however, will have to inspire the full support of the stronger powers in Latin America. The support of these proposals can make a reality of the principles of the "Charter of Organization of American States."

414 pages. \$5.18. MicA54-2128

POLITICAL SCIENCE, PUBLIC ADMINISTRATION

GUBERNATORIAL COORDINATION OF ADMINISTRATIVE BOARDS AND COMMISSIONS IN PENNSYLVANIA

(Publication No. 8574)

Harry Wesley Reynolds, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: James C. Charlesworth

The present study is an investigation of the administrative relationships which exist between operating boards and commissions and the executive establishment in a single state, the Commonwealth of Pennsylvania. More precisely, it is an investigation which seeks to explore and draw conclusions about the influence of independent operating plural-executive agencies in a particular state government upon the administrative hegemony of the Governor. In short, the dissertation seeks to determine how satisfactorily the executive duties of the largely autonomous plural-headed agencies in Pennsylvania have been coordinated with the relevant functions of operating departments directly under the Governor's control.

Various kind of plural-executive agencies have come into existence in Pennsylvania and other states: (1) those handling proprietary functions; (2) those handling professional licensures; (3) those charged with advisory duties only; (4) those managing commemorative or patriotic displays; and (5) those performing substantive activities which are of a continuing nature. Boards and commissions in Pennsylvania falling within the first four of these categories have been excluded from this investigation because of the infrequent, advisory, or self-contained nature of their duties, and a corresponding absence of important contacts with the executive departments.

Within the fifth category of plural-executive bodies, of which there are twenty-one, approximately sixty administrative interrelationships have arisen affecting eleven departments under the Governor's jurisdiction. A precise standard has been adhered to in the determination of suitable interrelationships for analysis, viz., the existence of a legally prescribed coextensive jurisdiction between a board or commission and a department over a distinct object or function.

For the purposes of this study coordination has been regarded as a desirable administrative objective. It has been defined as the harmonious functioning of mutually independent agencies in the fulfillment of common assignments.

The principal subdivisions of the dissertation are as follows: (1) After exploring the judicial and legislative framework which determines the nature of the Governor's appointing and removal powers in regard to the operating boards or commissions, the study seeks to determine the contributions of these powers to the objective of inter-agency coordination. The quality of gubernatorial appointments to boards and commissions has been fully inquired into, as well as the kind of controls which the Governor possesses over the hiring practices of these plural-executive agencies. (2) The internal organization of boards and commissions was studied at length to determine how auxiliary and substantive tasks are carried out. The relationship of internal board structure and integra-

tion to substantive inter-agency coordination has been stressed with regard to each of the plural-executive agencies. (3) Finally, the techniques developed for coordinating the external activities of operating boards and commissions with pertinent executive departments have been investigated at length. The contribution of auxiliary management devices such as budgeting, accounting, auditing, reporting, staff conferences, and legal service to the effectuation of coordination has similarly been examined.

On the basis of the evidence gathered for the dissertation it has been concluded that (1) gubernatorial coordination of the relevant work of operating boards and commissions with the executive establishment has not been difficult; (2) the instances of deficient board-departmental coordination among the respective areas of coextensive jurisdiction have been few; (3) patronage has been the most effective coordinating device in board-departmental relationships, due to the controls which the Governor enjoys over the appointing practices of boards and commissions; (4) coordination, though extant in most of the areas of interrelated jurisdiction, has been haphazardly pursued due to the defective internal organization of boards and commissions and the lay background of board and staff appointees; and (5) auxiliary management tools have contributed little to over-all board-departmental coordination.

400 pages. \$5.00. MicA54-2129

PSYCHOLOGY

PSYCHOLOGY, GENERAL

MEASURING TECHNICIAN PERFORMANCE

(Publication No. 8875)

James William Altman, Ph. D.
University of Pittsburgh, 1954

On the basis of a job analysis an evaluation form and eight tests were constructed, and two tests from the Flanagan Aptitude Classification Battery were selected for use. Tests were administered to 25 technicians in a petroleum research laboratory. Evaluations of technicians' performance were obtained from their supervisors. Each technician was evaluated by his immediate supervisor and his group leader.

The evaluation form contained ratings on each of the following areas:

1. Understanding and using equipment.
2. Understanding and following instructions.
3. Obtaining accurate data.
4. Picking out irregularities in data.
5. Analyzing data.
6. Overall effectiveness.

There were two ratings for each area. The first rating required selection of a qualitative description of performance and the second required an indication of what per cent of all technicians known to the supervisor were less satisfactory than the technician being rated.

The tests were as follows:

1. Apparatus construction from diagrams.
2. Apparatus construction from instructions.
3. Liquid measurement.
4. Measuring instruments.
5. Fluid flow control.
6. Problem solving.
7. Understanding equipment.
8. Arithmetic computation.
9. Tables (Flanagan Aptitude Classification Test).
10. Scales (Flanagan Aptitude Classification Test).

The following null hypotheses were investigated:

1. There is no significant correlation between a composite of all unweighted standardized test scores and a composite of unweighted standardized ratings by both supervisors.
2. There is no significant difference between the predictability of ratings by immediate supervisors and ratings by group leaders.

3. There is no significant difference between the predictability of qualitative description ratings and per cent superiority ratings.
4. There is no significant difference between the inter-rater correlation for qualitative description ratings and per cent superiority ratings.
5. Age, years of employment with the company, years of employment in research work, and years of school completed are not significantly correlated with composite test and composite criterion scores.

Results were as follows:

1. The correlation between a composite of standardized test scores and composite criterion was found to be .53, significant at the .01 level of confidence. This suggests the desirability of tryout of these or similar tests with additional technical personnel.
2. The difference between the predictability of ratings by immediate supervisors and group leaders was not significant at the .05 level of confidence.
3. Per cent superiority ratings were found to be more predictable than qualitative description ratings at the .05 level, but not at the .01 level.
4. The inter-rater correlation for qualitative description ratings (.78) was greater than the inter-rater correlation for per cent superiority ratings (.38) at the .01 level of confidence.
5. The correlation between years of school completed and a composite of unweighted standardized test scores (.46) was significant at the .05 level, but not at the .01 level. No other personal history variable was significantly correlated with test or criterion scores. The correlation between months observed and ratings was significant at the .05 but not at the .01 level for both immediate supervisors and group leaders.

77 pages. \$1.00. MicA54-2130

EXPERIMENTAL EXTINCTION IN HUMAN LEARNING

(Publication No. 8649)

Lorraine Kruglov Diamond, Ph. D.
Columbia University, 1953

The effect of three factors upon the "extinction" of a response to meaningful verbal material by school children was investigated. Specifically, the hypotheses tested were that, when reinforcement is no longer given, a response will be maintained in a way previously reinforced more by those individuals who (1) learned under conditions of partial reinforcement than by those who learned under conditions of continuous reinforcement, (2) were informed that reinforcement would no longer be given than by those who were not informed, and (3) were presented with easier tasks than by those presented with more difficult tasks. Twelve patterns of experimental conditions resulted from the simultaneous variation of two

conditions of reinforcement during learning, two conditions of information about the absence of reinforcement, and three levels of difficulty of non-reinforced tasks. Twenty children, equated for age and verbal intelligence, were assigned to each of the twelve experimental groups.

Half the children learned the task - discovery that the antonym of the stem word was the correct choice from among five options - under conditions of continuous or 100 per cent reinforcement, receiving reinforcement, in the form of knowledge that their responses were correct, for all the learning items. The other children learned under conditions of partial reinforcement, receiving reinforcement for two-thirds of the learning items. Both groups received the same number of reinforcements. Children who learned under the two conditions of reinforcement did not differ significantly in performance at the final stage of the learning series.

Following the learning series, a non-reinforced series was presented. Half the children were informed that reinforcement would not be given; the others were given no information about the absence of reinforcement. Three 90 item non-reinforced series, differing in the difficulty of the first 60 items, but identical with respect to the last 30 items, were distributed randomly among the subjects. The hypotheses were tested by comparing the mean number of antonyms chosen on the last 30 non-reinforced items by children subjected to the different reinforcement, information and difficulty conditions. Partial reinforcement during initial learning and information about the absence of reinforcement were effective in maintaining the set to respond in the way previously reinforced: those children who learned under conditions of partial reinforcement chose more antonyms than those who learned under conditions of continuous reinforcement, and those who were informed that reinforcement would not be given chose more antonyms than those who were not informed. The difficulty of the non-reinforced items did not affect the set to respond in the way previously reinforced.

There was no significant difference in performance among children assigned to the twelve experimental groups for a relearning series with continuous reinforcement provided, indicating that the experimental conditions merely affected performance on non-reinforced items.

The findings suggest that when it is desirable for behavior to be maintained in the absence of external reinforcement, individuals should be encouraged to assume responsibility for their own behavior.

Both partial reinforcement during initial learning of a response and information about external reinforcement being removed place responsibility on the learner through encouraging the internalization of reinforcement. In practice, therefore, a learning procedure by which the individual is encouraged to internalize his reinforcements and thus take responsibility for his own behavior (partial reinforcement) is preferable to one in which reinforcements are externalized all the time. When such a learning procedure is not practicable, the learner should be informed, once he has reached a specified level of performance, that

external reinforcement no longer will be forthcoming, in this way placing responsibility on the individual. 124 pages. \$1.55. MicA54-2131

**WORK VALUES IN RELATION TO AGE,
INTELLIGENCE, SOCIO-ECONOMIC LEVEL,
AND OCCUPATIONAL INTEREST LEVEL**

(Publication No. 8680)

Attia Mahmoud Hana, Ph. D.
Columbia University, 1954

Purpose of the Study: This study attempts to discover whether adolescent boys of two differing age groups differed in the degree of crystallization of their work values, and whether the ranking of a set of work values was related to intelligence, socio-economic level, and occupational interest level.

The Pilot Study: A Work Values Inventory, of the paired comparison type, was used to obtain the preference of the individual with respect to fifteen values related to work, viz: "social welfare," "theoretical aspect of work," "mastery," "creativity," "planning and supervision," "independence in work," "material welfare," "security," "status," "good associates," "good supervision," "variety in work," "freedom to lead one's own way of life," "material conditions of work," and "aesthetic aspect of work."

A pilot study showed that one of two forms of the Work Values Inventory, differing in instructions for recording responses, was more reliable than the other (reliability = 0.81). Its comprehensibility and word difficulty were found appropriate to the age levels used in the study. The test-retest reliability of judgment of difficulty of choices and of consistency of choosing one value over the other were 0.74 and 0.69, respectively.

The Main Study: The number of subjects in the main study was 108 Seniors (12th grade students) and 172 Freshmen (9th grade students).

The instruments used in this study were: (1) Work Values Inventory, Form H2; (2) The A.C.F. Psychological Examination for College Freshmen; (3) a Personal Data Sheet for obtaining information concerning socio-economic level; and (4) the Strong Vocational Interest Blank for Men (Occupational Level Key).

The non-parametric median test was used to test the significance of difference between the two age groups with regard to the degree of value crystallization as measured. The Chi-square test was used to test the relation between values ranking and intelligence level, socio-economic level, and occupational interest level.

The Results: (1) There was no significant difference between the age groups with regard to the difficulty expressed in ranking one value over another.

There was a significant difference between the age groups in consistency in choosing one value over another.

(2) The high, average, and low

intelligence level groups of the older adolescents differed significantly with regard to ranking the three following values only:

- (a) **Creativity:** The high level group ranked this value higher than did the average and low intelligence level groups.
- (b) **Planning and Supervision:** The low level group ranked this value higher than did the two other groups, and the high level group higher than did the average level group.
- (c) **Freedom to Lead One's Own Way of Life:** The high and average level groups ranked this value higher than did the low level group.

(3) The higher, middle, and lower socio-economic level groups of the older adolescents differed significantly only with regard to Planning and Supervision. The higher and middle level groups ranked this value significantly lower than did the lower level group.

(4) The high and low occupational interest level groups of older adolescents differed significantly with regard to the two following values only:

- (a) **Status:** The high level group ranked Status higher than did the low level group.
- (b) **Theoretical Aspect of Work:** The low level group ranked this value higher than did the high level group.

The conclusions of the study have relevance for increased understanding of the development of a value structure and of the factors influencing this structure. 238 pages. \$2.98. MicA54-2132

**AGREEMENT BETWEEN VOCATIONAL
PREFERENCE AND INVENTORIED INTEREST
IN RELATION TO SOME PRESUMED
INDICES OF VOCATIONAL MATURITY**

(Publication No. 8732)

Perin Munchershaw Mehenti, Ph. D.
Columbia University, 1954

This investigation, based on ninth-grade boys in Middletown, New York, studied agreement between vocational preference and inventoried interest in relation to some presumed indices and concomitants of vocational maturity. Boys who had a primary interest pattern on the Strong Vocational Interest Blank in the occupational group corresponding to their vocational preference were classified as mature, while those with a tertiary or no interest pattern in the corresponding Strong occupational group were classified as immature.

The following presumed indices of vocational

maturity were investigated:

Strength of relationship between fantasy needs and vocational preference as a negative index: Ratings of needs derived from the Incomplete Sentences Tests were correlated with preference for technical occupations, separately for the mature and immature groups.

Agreement between ability and vocational preference: The Revised Minnesota Paper Form Board Test and the Bennett Test of Mechanical Comprehension were used to assess spatial visualization and mechanical aptitude respectively, and the mean scores of the mature and immature boys were compared.

Accessibility of vocational preference to the present socio-economic status of the family: The difference between the mean ratings on a modification of Warner's Index of Status Characteristics for boys expressing professional preferences and those expressing technical (skilled) preferences was investigated, separately for the mature and immature groups.

The following variables, which are commonly accepted as indices of general maturity, were also investigated:

Similarity of interests to the interests of adults: The mean scores of the mature and immature groups on Strong's Interest-Maturity Scale were compared.

Intelligence: The mean scores of the mature and immature groups on the Otis Gamma Test were compared.

Acceptance by peers: A chi square test was made to study the relationship of net scores on the Guess Who Test to vocational maturity.

As five significant need-preference relationships were found in the mature group and two in the immature group, it was concluded that strength of relationship between needs and vocational preference was not a negative index of vocational maturity. The findings suggested that having a preference for an occupation which appears to promise outlets for one's dominant needs may be a positive index of vocational maturity, and a further investigation of it appeared worthwhile.

Mature boys expressing preference for technical and physical science occupations were found to have higher scores on spatial visualization but not on mechanical aptitude when compared with immature boys expressing preference for the same occupations. Since mechanical aptitude is a multi-factorial trait, it was concluded that agreement between ability and vocational preference may be a valid index of vocational maturity if the measure of ability is factorially pure.

In the mature group boys expressing professional preferences were found to come from families with higher socio-economic status than boys expressing preference for technical (skilled) occupations, while in the immature group the reverse was found. This indicated that accessibility of vocational preference to the present socio-economic status of the family may be a valid index of vocational maturity.

Vocationally mature boys were found to be higher than vocationally immature boys on interest-maturity, but not on intelligence and peer acceptance. This seemed to indicate that vocational maturity was distinct from general maturity, and that interest-ma-

turity may actually be an index of vocational maturity.

The significance of the findings was discussed in the context of the limitations of the study, and suggestions for future research were formulated.

100 pages. \$1.25. MicA54-2133

SITUATIONAL PERFORMANCE PROBLEMS IN THE STUDY OF THE PERSONALITY AND ATTITUDE ASPECTS OF ADMINISTRATIVE PERFORMANCE

(Publication No. 8912)

Barbara Jane Suttell, Ph. D.
University of Pittsburgh, 1954

Successful administrative performance is determined not only by the intellectual abilities, aptitudes, and skills of the individual, but also by his personality and attitude characteristics. Adequate procedures are available for estimating intellectual abilities and various aptitudes essential for administrative success. Comparable procedures, however, are not available for evaluating essential personality and attitude characteristics.

This study concerns the development of a procedure for evaluating the personality and attitude characteristics essential to successful performance of the Air Force administrative officer, to be used in the officer candidate training program. The situational performance test seemed a desirable approach for the Officer Candidate School conditions. The basic design of the situational test is the placing of the individual to be tested in a simulated job situation in order to observe what he does in the situation. The simulated job situation provides the officer candidate with an opportunity to display behaviors critical to on-the-job success, and at the same time, provides for the evaluation of his performance. The situational test thus provides an essential link with the typical on-the-job performance which we are attempting to predict.

The critical personality and attitude aspects of administrative Air Force officer performance were identified by classification in terms of behaviors of pertinent incidents collected for a study of officer effectiveness. These critical behaviors numbered 52, and were classified in five major behavior areas: I. Personal organization; II. Working effectively with others; III. Adjusting to unusual or unexpected situations; IV. Group orientation; and V. Personal habits of work, integrity, and motivation.

Situational problems were developed on the basis of detailed rationales for the 52 critical behaviors. The problems were administered to groups of specified number under standardized conditions, using standardized instructions for examiners and for participants. The problems were administered and scored by OCS tactical officers. Individual performance on each problem was scored by means of a behavior check list specific to that problem. The behavior was scored immediately as it occurred, simply by a mark in the appropriate place.

Several tryouts were conducted at the Officer

Candidate School, and at two university Air Force Reserve Officer Training Corps units. The final form of the test consisted of 16 situational problems. This form was administered at the Officer Candidate School to 480 officer candidates one week prior to their graduation. Each candidate participated in all 16 problems. Total testing time for each candidate was six hours.

The statistical findings for the final form were based on a total of 343 complete cases. Inter-observer reliability, estimated on the basis of 40 different examining teams, each scoring one problem only, was .75; test reliability, split-half method, .43; and test reliability, Kuder-Richardson formula 20, .68. The correlations of total test score with four available OCS measures: flightmate paired comparisons, tactical officer paired comparisons, final military class standing, and final academic grade, were .21, .24, .25, and .25, respectively.

The situational test approach to the problem of evaluation of the potential Air Force administrative officer was found to be feasible in the OCS training program. The situational test provides the candidates with an opportunity to display behaviors critical to job success - an opportunity they do not have within the training situation - and at the same time, provides for observation and recording of their performance. The scoring procedure achieved a satisfactory degree of objectivity as evidenced by the obtained inter-observer reliability of .75. The reliability of the test compares favorably with reliabilities which have been reported for other situational tests. The correlations obtained for the situational test total scores with available OCS criterion measures were significant at the one per cent level.

137 pages. \$1.71. MicA54-2134

PSYCHOLOGY, CLINICAL

AN ANALYSIS OF DIFFERENCES BETWEEN SUICIDAL AND PSEUDO-SUICIDAL PATIENTS THROUGH THE USE OF PROJECTIVE TECHNIQUES

(Publication No. 8531)

Harold Bernard Crasileck, Ph. D.
University of Houston, 1954

The purpose of this research was to determine whether classifications such as Suicidal and Pseudo-Suicidal had meaning and value in the clinical consideration of such cases, and to determine the nature and extent of these differences between the two groups as revealed by psychodiagnostic testing.

The subjects consisted of a total of sixty-six patients who had been hospitalized following attempted suicide. Three psychiatric judges interviewed each of these patients after their admission to the hospital. These psychiatric interviews were based on nine indices of suicidal tendencies formulated by the

writer. A high degree of reliability was found to exist between the ratings of the psychiatric judges.

Each subject was administered a battery of psychological tests by the writer, including the Wechsler-Bellevue Scale of Intelligence, Form I; the Rorschach Test; and 12 cards from the Thematic Apperception Test. After each of these tests was scored, the patients were matched as closely as possible for the following: sex, age, religion, occupation, educational level, marital status, and diagnosis.

Standard deviations and critical ratios were obtained for the Full Scale, Verbal Scale, and Performance Scale of the Wechsler-Bellevue Intelligence Scale. In addition the mean gain technique was used on certain combinations of sub-tests as a further means of investigating differences between the two groups.

The coded Rorschach Test records were analyzed by the writer in terms of constellations of "signs" reported in the literature which measure various behavior categories. Medians and quartile deviations were then computed on these records as the descriptive measures of the distribution of the Rorschach "signs."

In addition to the above, the "Rorschach Depression Ratio" was established for each of the individuals. This ratio was also based on the "signs" reported in the literature as validating measures of depression. The scores of the six measures of depression were converted into standard score units and were then used to compute into the "Rorschach Depression Ratio."

The coded Thematic Apperception Tests were divided into three groups according to a table of random numbers. These stories were rated by the two judges. The stories were ranked on a 5 point scale in terms of the presence or absence of certain criteria. These data were treated by the Signed Rank Test. Levels of confidence were obtained as well as medians and quartile deviations.

The following results were found when the Suicidal and Pseudo-Suicidal groups were compared:

1) No reliable differences were shown on the Full-Scale or Sub-Scales of the Wechsler-Bellevue Intelligence test, except on Comprehension, in which the Suicidal group made higher scores. However, on both the Full-Scale and each Sub-Scale, except Picture Arrangement, in which no differences were found, the Suicidal group had higher scores than the Pseudo-Suicidal group.

2) There were no reliable differences found between the two groups on "aggression toward others" in either the Rorschach or the Thematic Apperception Tests.

3) There were no reliable differences found between the two groups on "aggression by others" in either the Rorschach or the Thematic Apperception Tests.

4) Reliable differences were found in the Thematic Apperception Test in which the Suicidal group made the highest scores in the category of "aggression toward the self." No reliable differences were found in this category on the Rorschach.

5) Reliable differences were found in both the

Rorschach and Thematic Apperception Tests in which the Suicidal group made the highest scores in the category "deep depression." The Pseudo-Suicidal group were, however, characterized by an absence of depression.

6) Reliable differences were found in both the Rorschach and Thematic Apperception Tests favoring the Pseudo-Suicidal group on the category "impulsive anxiety."

7) There were reliable differences favoring the Pseudo-Suicidal group in the category of "histrionic behavior" as evidenced by the results of both the Rorschach and Thematic Apperception Tests.

From the above findings it would appear that future studies concerning suicidal patients should take into consideration differences existing between these patients, rather than considering all suicidal patients as members of the same population.

90 pages. \$1.13. MicA54-2055

AN EXPERIMENTAL STUDY OF PERFORMANCE UNDER STRESS IN RELATION TO INTELLECTUAL CONTROL AND EXPRESSED SELF-ACCEPTANCE

(Publication No. 8893)

Allan Goldfarb, Ph. D.
University of Pittsburgh, 1954

This is an experimental study of the relationship between performance under stress and the personality correlates of intellectual control and expressed self-acceptance. Thirty fraternity pledges were administered the Rorschach Test, Digit Symbol test, and the Berger Scale of Expressed Self-Acceptance. The latter two tests were given under control and stress conditions. Selected indices in the Rorschach test together with the Berger Scale were used to predict performance of the pledges on the Digit Symbol test. The product moment method of finding r was used to test statistically the following experimentally stated hypotheses:

1. There is a negative relationship between decrement in performance under stress on the Digit Symbol test and each of the three Rorschach indices of intellectual control.
2. There is a negative relationship between decrement in performance under stress on the Digit Symbol test and the measures of Expressed Self-Acceptance on the Berger Scale obtained under control conditions.
3. There is a positive relationship between the measures of Expressed Self-Acceptance obtained under control conditions and each of the three Rorschach indices of intellectual control.
4. There is a positive relationship between the measures of Improvement under Stress on the Digit Symbol test and the Rorschach indices of intellectual control.
5. There is a positive relationship between the measures of Improvement under Stress on the Digit Symbol test and the measures of

Expressed Self-Acceptance on the Berger Scale obtained under control conditions.

6. There is a negative relationship between the measures of Improvement under Stress on the Digit Symbol test and the measures of Defensiveness under Stress obtained from the Berger Scale.
7. There is a negative relationship between the measures of Stress Maximum on the Digit Symbol test and the Rorschach indices of intellectual control.
8. There is a negative relationship between the measures of Stress Maximum on the Digit Symbol test and the measures of Expressed Self-Acceptance on the Berger Scale obtained under control conditions.
9. There is a positive relationship between the measures of Stress Maximum on the Digit Symbol test and the measures of Defensiveness under Stress obtained from the Berger Scale.
10. There is a positive relationship between decrement in performance under stress on the Digit Symbol test and the measures of Defensiveness under Stress obtained from the Berger Scale.
11. There is a negative relationship between the Rorschach indices of intellectual control and the measures of Defensiveness under Stress obtained from the Berger Scale.

No significant relationships at or beyond the five per cent level of confidence were found for any of the hypotheses. On the basis of these findings, it can confidently be concluded that, for the conditions of this experiment, neither the Rorschach test nor the Berger Scale of Expressed Self-Acceptance can be used to predict performance under stress.

88 pages. \$1.10. MicA54-2135

DIRECTED AND UNDIRECTED LEARNING IN CHRONIC SCHIZOPHRENIA

(Publication No. 8671)

Albert Greenberg, Ph. D.
Columbia University, 1953

In the clinical testing of schizophrenic patients it is frequently observed that their performance on tests in which they are instructed to learn certain material is better than would be predicted by the general clinical evaluation. It is possible, however, that the characteristic withdrawal patterns of schizophrenic patients may be more accurately reflected by undirected learning tests. In such test situations, requiring self-initiated sets to learn, it is expected that the schizophrenic individual's lack of interest in the environment would be manifested by a failure to observe objects and relationships toward which his attention has not been directed.

The specific hypotheses tested in this study were that (a) normal persons will perform better than schizophrenic patients on tests of undirected learning, and (b) normal persons will perform better than schizophrenic patients on tests of undirected learning

even after allowance is made for differences in scores on directed learning.

The method used to test these hypotheses was to compare a group of schizophrenics with a group of normal individuals on three experimental tests, each yielding a score for both directed learning and undirected learning. Buffer tests were interpolated between the experimental tests in order to interrupt a possible set to expect questions about the stimulus material beyond that implied by the instructions.

The experimental group consisted of 44 chronic schizophrenics whose diagnoses included all of the Kraepelinian subtypes. They were, however, homogeneous with regard to good contact and cooperativeness. The control group consisted of 44 hospitalized patients who were convalescing from minor surgery and were free of any psychiatric diagnosis. Both groups were male veterans of World War II and were equated for age, education, and intelligence as estimated by the vocabulary score on the Wechsler-Bellevue Intelligence Scale, Form 1.

The following experimental tests were administered: (a) Color-Position, in which the recall of the colors of geometric forms was the directed task, and the recall of the original positions of these forms was the undirected task. (b) Paragraphs, in which the recall of the content of one paragraph from the Wechsler Memory Scale was the directed task and the recall of the second paragraph, when the instructions called for merely tallying the frequency of the words, was the undirected task. (c) Metal-Nonmetal, in which the recall of familiar metal items was the directed task and the recall of familiar nonmetal items, exposed simultaneously with the first category, was the undirected task.

The results indicated that the normal group was superior to the schizophrenic group on all undirected tests, and that, even after correcting for differences in directed learning scores by the analysis of covariance technique, the normal group was superior to the schizophrenic group on two of the three undirected learning tests. An examination of the Paragraphs Test, which failed to support the second hypothesis, resulted in the opinion that this test did not provide an adequate test of the hypothesis. It can be stated, then, that the results of this experiment tend to support the hypotheses.

The major conclusion of the experiment was that schizophrenic patients show a greater impairment in undirected learning than in directed learning. This conclusion must be limited to the category of patients tested in this study since there are some indications that it does not apply to other categories, such as paranoid and acute schizophrenia. A subsidiary conclusion was that Cameron's concept of overinclusion, as measured by the Metal-Nonmetal Test, does not apply to the schizophrenic sample in this study.

62 pages. \$1.00. MicA54-2136

SOME FACTORS INVOLVED IN EMPATHY

(Publication No. 8677)

Howard Marvin Halpern, Ph. D.
Columbia University, 1954

Chairman: Paul E. Eiserer

This study is concerned with the relationship between empathic ability and (a) the similarity of the empathizer and his referent, (b) the role played by attribution, (c) the self-satisfaction of the empathizer in the empathy area and (d) specific personality characteristics.

The Experiment

The subjects of this inquiry were 38 female student nurses in four training groups. Each subject was well acquainted with the other members of her group.

At the first meeting the subjects were asked to rate themselves on an inventory comprised of 80 items from the Guilford-Martin Inventory of Factors GAMIN. The items had been selected as appropriate for use in a predictive empathy test. The subjects were required to respond affirmatively or negatively to each question. They were also asked to indicate whether they were "Pleased" or "Dissatisfied" with their behavior in the area represented by each item.

A subject's similarity to each of the other members of her group was determined by tabulating the number of "Yes" or "No" items that they answered in the same way. The two group members most Similar and most Dissimilar to each subject, plus a member between these extremes, were selected to function as predictees or referents for that subject.

When the subjects were seen two weeks later they were instructed to predict how their five referents responded to the inventory during the first session.

Empathy and Similarity

The data reflected four factors in the relationship of empathic ability and similarity.

1. There was a high positive correlation between predictive accuracy and the similarity of the predictor to her predictee.

2. Subjects predicted with significantly greater accuracy on items that they had, in their self-ratings, answered in concordance with their predictee.

3. On nonconcordant items the subjects did not predict more accurately for Similar than for Dissimilar predictees. This indicates that the greater total accuracy found when subjects predict about Similar referents is confined to their areas of concordance.

4. No relationship was found between overall predictive accuracy and predictive accuracy on unshared items.

Alternative rationales may be offered to explain the greater accuracy of predictions made about Similar people and the limitation of this greater accuracy to the specific areas of concordance. It may be reasoned that the subjects attributed their own characteristics to their predictees so that when the predictees were similar to them, the estimations were inevitably correct.

A second possibility is that only when the subjects and their predictees have had similar phenomenological experiences, as reflected by the concordant items, can there be a capacity for empathy. In areas of unshared phenomenological experiences, the subjects did not have the needed empathic potential.

Empathy and Self-Satisfaction

The subjects predicted with significantly greater accuracy on items where they had indicated self-satisfaction rather than dissatisfaction. It is suggested that in areas where the subjects were discontent about their own behavior disorganizing anxiety may have been aroused and distorting defenses mobilized, thus impairing the accuracy of interpersonal perceptions.

Empathy and Personality

The high correlation between similarity and empathy, particularly if similarity is considered a measure of the empathic potential existent in the situation, leads to inferences about the good empathizer. An individual who has a wide range of phenomenological experiences of the type that do not drastically deviate from the normative experiences of his reference group would be able to empathize with a relatively greater number of people.

A significant correlation was found between predictive accuracy and femininity of attitudes and interests. This might indicate that the good empathizers were better adjusted to their sexual role or it may reflect a relationship between empathic ability and emotionality since many items scored for femininity involved the experience and expression of intense emotion. 87 pages. \$1.09. MicA54-2137

LEARNING ABILITY OF RATS WITH EXPERIMENTALLY INDUCED ARTERIOSCLEROSIS

(Publication No. 8948)

Jack Hand, Ph. D.
Florida State University, 1954

The purpose of this study was to repeat an investigation in which calcium deposits were induced in the arteries of laboratory rats, to extend that work by clarifying the changes in weight, pituitary and adrenal glands, liver, brain, and arteries, that might accompany administration of the drug (irradiated ergosterol), used to induce the deposits, and to determine whether or not such animals would exhibit diminished learning ability.

Two groups of Wistar rats received similar treatment throughout the experiment except that one group (experimental) received 2.5 cc. of irradiated ergosterol as a substitute for codliver oil in the diet. During the experimental period the experimental animals lost approximately 25% in body weight, but regained it in a short time when the drug was discontinued.

Gross and histological examinations at period of three and 12 months after removal from the drug revealed only one anatomical difference between the control and experimental animals. The medial arterial tissue of the experimental animals contained calcium deposits. These arteries were rigid and resistant to touch while the arteries of the control animals were soft and pliable.

Observations of both groups in a water maze and in an avoidance conditioning situation showed the experimental animals to be less proficient in both learning situations.

The writer interpreted the results as indicating that the anatomical differences played a causal role in the production of the observed behavioral differences. 33 pages. \$1.00. MicA54-2138

THE EFFECT OF PRAISE AND REPROOF ON LEARNING AND RETENTION OF NON-PSYCHOTICS AND SCHIZOPHRENICS

(Publication No. 9207)

Charles V. Lair, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor George E. Copple

The problem in the present investigation was to ascertain the relative effects of praise and reproof on schizophrenic learning. A group of non-schizophrenics furnished a baseline of interpretation for the performance of the schizophrenics, and made it possible to compare the present results with studies which have been done previously by other experimenters. It was not expected that the non-schizophrenics would show any differential responses with an application of verbal incentive over the responses made by a control group of non-schizophrenics. This conforms to previous evidence.

There were 36 schizophrenic subjects, all classified as chronic, and including all subtypes except paranoid. The average age was 35.5 years, and the ages ranged from 26 to 49 years. Average education was 9.2 years, and ranged from 3 to 17 years of schooling. The length of last hospitalization showed an average of 3 years and 2 months, with a range from 5 months to 9 years, 9 months.

The 27 non-schizophrenic subjects were patients from a medical ward of a general medical hospital. Average age of these patients was 36.4 years with a range of 24 to 48 years. Average education was 9.6 years with a range from 2 to 18 years of schooling.

The two samples were divided into three matched groups, and randomly assigned to a condition of praise, reproof, or neutral incentive. An immediate recall of a short, meaningful paragraph similar to the experimental verbal task was used as the basis for equating the groups for learning and retention. The experimental tasks were four trials in a cumulative learning-recall test using a short meaningful story, and four trials on a card sorting task. The former

task involved rote memory, and latter task demanded the retention of placement, and the employment of the concepts of opposites and categories.

Analysis of the data was done through the median-sign test which yielded a chi-square table. But this did not admit of an overall test, and it was necessary to rely on subjective interpretation of the retention curves as a means of revealing the nature of the changes due to the experimental variables. The results are listed below:

(1) Schizophrenics improve in the learning and retention of meaningful verbal materials when praised, to a greater extent than when they are re-proved or are given no information as to their level of functioning.

(2) Schizophrenics do not deteriorate more in the learning and recall of verbal materials when re-proved than when no information is given them.

(3) Schizophrenics do not show any greater improvement in card sorting with praise than with re-proof or under neutral conditions.

(4) Schizophrenics in the card sorting task do not show a relatively poorer performance following re-proof than when under neutral conditions.

(5) The effect of the external incentive seems to depend upon the nature of the task.

When external incentives are ineffectual, it may be that the effects are inhibited by internal incentives. Non-schizophrenics who demonstrated no change under any condition may be working at their perceived maximum, and may continue to work at this rate until some external incentive becomes stronger than the internal incentive. The schizophrenic whose internal incentives may direct him toward ideational solutions to the exclusion of reality may react to external incentives as does the child, as the sign of progress toward or away from specific reward-punishment situations. But under stress, the ideational response of the schizophrenic may be confirmed with a sacrifice of more adaptive, socially acceptable behavior.

87 pages. \$1.09. MicA54-2139

THE REDUCTION OF ANXIETY UNDER THREE EXPERIMENTAL CONDITIONS

(Publication No. 8706)

Beatrice R. Lane, Ph. D.
Columbia University, 1954

Extinction of anxiety, under varying conditions of treatment, was investigated. The persistent nature of anxiety-reducing responses was attributed to the immediately rewarding effect of relief from anxiety-tension. The problem, therefore, was how to reduce the anxiety which necessitated a predetermined response. If previously neutral cues, through their association with a painful stimulus, acquired reinforcing value, i. e., could reduce anxiety tension by their removal, then the fear response betokening the presence of anxiety should be extinguished by a reneutralization of cues. In line with the general hypothesis pertaining to reneutralization of cues, three specific hypotheses were advanced:

I. Restraint of the animal within an originally pain-producing situation, with the pain stimulus removed, should reneutralize the cues to anxiety.

II. A positive reinforcer (food), in combination with restraint, should accelerate the extinction process.

III. A positive reinforcer (petting), in combination with restraint, should accelerate the extinction process.

To test the stated hypotheses, four groups of rats, consisting of a control and three experimental groups, were placed in a two-compartment box: one white and electrified, one black and non-electrified, with a door between them. The animals were subject to the following conditions:

1. Acquisition. The animals were given 59 shock trials in the white compartment with escape into the black compartment permitted.

2. Interpolated Activity. The Control Group was not given this condition. The No-Escape Group was confined in the white box with the shock off for four fifteen minute trials. The Food Group and the Petting Group, in addition to confinement in the white box with shock off, was offered food or was petted respectively at regular intervals during the four fifteen minute trials.

3. Extinction. All animals were placed in the white box for sixty trials with shock off and escape into the black compartment permitted.

The criteria used for extinction were as follows:

Primary Data.

1. Latency
2. Time in the white box
3. Returns to the white box

Auxiliary Data.

1. Defecation
2. Position
3. Movement

The results obtained support the three specific hypotheses advanced as follows:

1. Hypothesis I was supported since the No-Escape Group showed significantly less resistance to extinction than did the Control Group for all measures.

2. Hypothesis II was supported since the Food Group, with the exception of the last block of ten trials on one measure, showed significantly less resistance to extinction than did the No-Escape Group for all measures.

3. Hypothesis III was partially supported in that the Petting Group showed consistently less resistance to extinction than the No-Escape Group but this difference was not significant when tested statistically.

Conclusions drawn from the analysis of data:

1. Confinement acted as a strong agent, in itself, in reneutralizing cues to anxiety and facilitating the extinction of a fear response.

2. The addition of food to confinement acted to accelerate, to a significant degree, the reneutralization of cued anxiety and the extinction of a fear response.

3. The addition of petting to confinement produced

an ambiguous result insofar as acceration of the re-neutralization and extinction processes is concerned. It was inferred that, given more favorable circumstances, petting should prove to be as effective a variable as food.

An interpretation based on the degree of movement engendered by each of the variables as being explanatory of the results obtained was offered. A relation between amount of movement and completeness of reneutralization was supported by the data.

A further follow-up of the degree of potency of each of the variables, in terms of parametric study, was offered as a possible area of worthwhile exploration. 105 pages. \$1.31. MicA54-2140

THE RELATIONSHIPS BETWEEN CONSTRUCTION OF FORM-COLOR-SPATIAL DESIGNS AND PSYCHOPATHOLOGY

(Publication No. 8712)

Monroe Louis Levin, Ph. D.
Columbia University, 1954

This research was undertaken to examine one aspect of the proposition that a person's responses to unstructured tasks may be used to predict his mode of response in life situations. The Lowenfeld Mosaic Test was chosen as the major instrument in the research because of characteristics which suited it well to the needs of the study. Examination of the literature provided numerous likely hypotheses concerning the relationships between Mosaic performance and personality, and revealed contradictions and inconsistencies which required examination.

Method

The method of group comparisons was used. Mosaic performances were compared to two criteria, psychiatric diagnosis and scores on the Wittenborn Psychiatric Rating Scales. Performances of one group were compared with those of dissimilar groups to determine whether the hypothesized Mosaic signs differentiated between the groups.

Signs which had been proposed by Lowenfeld or Wertham, but which had either been omitted from the research or modified for inclusion, were examined after the data had been analyzed.

Subjects

Noninstitutionalized subjects who were functioning normally in society were divided into "normal" and "maladjusted" groups by means of scores on the Cornell Index. Institutionalized subjects had been formally diagnosed as neurotics, familial mental defectives, schizophrenics, or general paretics. Selective criteria for each of the diagnostic groups were given, as were data relative to age and ethnic origin.

Wittenborn ratings could be obtained only for certain institutionalized subjects, so that the second

criterion group contained no normal, "maladjusted," or mentally defective subjects.

Uncontrolled Variables

The variables of socio-economic status, intelligence, age, and ethnic origin were uncontrolled because of practical difficulties in the research. Failure to control socio-economic status and intelligence was justified. Two brief experiments indicated that lack of control of the variables of age and ethnic origin probably did not affect the findings.

Preparatory Experiments

Two experiments investigated scoring reliability and bias in scoring of the data. It was concluded that a teachable, reliable method had been devised for scoring the Lowenfeld Mosaic Test and that bias in scoring had been adequately controlled.

Results

The results of the major research were sweepingly negative. Only one of the numerous Mosaic characteristics which were investigated functioned as hypothesized.

It was concluded that, insofar as the results pertain to the major hypothesis, it cannot be assumed that responses to any and every sort of ambiguous task may be regarded as possessing predictive value. Attention was called to the need for careful and explicit definition of the particular aspects of specific situations which have prognostic and predictive value.

It was also concluded that the Lowenfeld Mosaic Test cannot be used in its present form to predict a person's mode of response to life situations, nor may it be regarded as a useful differential diagnostic tool.

In discussing the results, it was suggested that the discrepancies between clinical impressions and experimental findings may be attributed to failure to recognize that cues were obtained from the interview aspects of the testing situation, rather than from the Mosaic Test itself. The need for careful, objective verification of empirically-determined impressions was stressed. 154 pages. \$1.93. MicA54-2141

PERCEPTUAL ATTITUDE, MOTIVATION, AND THEIR INTERACTION IN A SIZE CONSTANCY SITUATION

(Publication No. 8585)

George Spivack, Ph. D.
University of Pennsylvania, 1954

Supervisor: Mortimer Garrison, Jr.

This study was instituted to investigate the relationship between a perceptual attitude, termed by Klein "tolerance vs. resistance to unstable fields," and behavior in a size constancy situation. It was

hypothesized that since the size constancy situation calls forth processes directed toward stabilizing the perceptual field, differences in constancy performance, under varying instructions and field conditions, could be predicted from knowledge of people's characteristic tolerances for field instability. It was also hypothesized that since motivation has been shown to alter perceptual judgments of need-relevant objects, a need state will have less effect on the judgments of people who are resistant to unstable or changing fields than people who are more tolerant of unstable fields.

Utilizing Klein's procedure, tolerant people were defined as individuals who perceived relatively wide ranges of *phi* movement, resistant people being those who perceived relatively narrow ranges of *phi* movement. Twenty undergraduates were suitable for assignment to each group. Then in a hungry state, all Ss judged the sizes of neutral and need-relevant stimuli at two distances and both the *look* and *bet* instructions used by Singer.

There were three main findings. First, people characteristically resistant to unstable fields did not alter their constancy performance as easily as people more tolerant of unstable fields, despite instructions and field conditions demanding change. Second, resistant people consistently gave significantly larger size constancy estimates than tolerant people. Third, resistant and tolerant people behaved similarly when dealing with need-relevant stimuli.

The results supported the main predictions for instructions and field conditions but not for motivation. The findings were related to past constancy research and Klein's perceptual attitude. Suggestions were made concerning the functioning and possible significance of constancy perception in the total adjustment of the organism. The implications of the results for motivation research were also discussed.

60 pages. \$1.00. MicA54-2142

PSYCHOLOGY, EXPERIMENTAL

THE EFFORT VARIABLE IN INSTRUMENTAL CONDITIONING

(Publication No. 9024)

Edwin Gary Aiken, Ph. D.
University of Illinois, 1954

A panel pressing apparatus was employed to study the effect of varying the amount of effort expenditure in responding upon the acquisition, extinction, and spontaneous recovery of an instrumental conditioned response. Two effort levels were used: 32 gms. pressure for the high effort condition and 5 gms. for the low effort condition. 80 albino rats, divided into 8 groups of 10 animals each were used in the final results. Half of the 80 animals were given 45 learning trials under high effort expenditure and half under low effort requirement. Then, half of the animals in each of the learning conditions were extinguished under high effort and half under low effort, thus creating 4 experimental conditions during extinction.

Finally, half of the animals in each of the extinction conditions was tested for spontaneous recovery under high effort and half under low effort, thus producing 8 spontaneous recovery groups.

Using the number of trials to a latency criterion, an analysis of the learning data indicated that the criterion was reached sooner under low than under high effort expenditure. Employing another latency criterion, an analysis of variance of the extinction scores indicated strong trends in the direction of increased resistance to extinction following high effort learning and reduced resistance to extinction with high effortfulness during the extinction trials. Using the same latency criterion as in the first experimental extinction, a second extinction series was run and the resistance to extinction used to index the amount of spontaneous recovery. An analysis of variance of this data indicated greater recovery following high effort learning, less recovery following high effort during extinction, and depressed recovery with high effort during the recovery test itself. The interaction between learning and extinction during spontaneous recovery approached statistical significance.

6 theoretical approaches to the analysis of the experiment were attempted and 4 of these were rejected as inadequate to various parts of the data. A two-stage mediation hypothesis and an extended Hullian conception were both found to be adequate to the major experimental effects obtained.

The study was broadly interpreted as indicating the inadequacy of much current day theorizing about the effort variable in instrumental conditioning.

99 pages. \$1.24. MicA54-2143

THE RELATION BETWEEN CRITICAL FLICKER FREQUENCY AND SEVERAL PSYCHOLOGICAL VARIABLES

(Publication No. 9706)

Carroll Monroe Colgan, Ph. D.
University of Florida, 1954

Many medical and physiological studies have demonstrated that the critical flicker frequency of an individual is closely related to the condition or functioning of his central nervous system. It is important that this physiological indicator be studied in order to determine its relation to mental functioning; however, little has been done in this area.

The present study was designed to investigate the relation between critical flicker frequency and a number of psychological variables. These were attention, memory, perceptual ability, scholastic aptitude and scholastic achievement.

Recognized, standard tests for attention (Philip's Test of Attention), memory (Wechsler Memory Scale), and perceptual ability (Minnesota Paper Form Board) were administered in various group and individual testing sessions to a group of 40 college sophomore men. Twenty-seven other subjects took part in some or all of the testing sessions, but their scores were rejected on various grounds.

Scores for the 40 subjects on a test for scholastic aptitude (the 1949 Edition of the Psychological Examination, College Level, of the American Council on Education) were obtained from information furnished by the University Examiner. Scholastic achievement scores in the form of honor point averages were obtained from the University College files.

Critical flicker frequency measurements on the 40 subjects were made and correlated with the scores for each subject on each of the variables listed above. Mean values and values for the variability associated with each measure are presented in tabular form, as are also the intercorrelation coefficients.

The intercorrelations were interpreted in terms of Spearman's modification of the joint method of agreement and difference, as well as in terms of the usual statistical criteria. It was concluded that for subjects and testing conditions similar to those used in this study, critical flicker frequency is probably not, to any appreciable extent, related to attention, memory, perceptual ability, scholastic aptitude, or scholastic achievement.

Attention was noted as having a significant relation to scholastic aptitude and to scholastic achievement. This finding is worthy of note inasmuch as the relation has apparently never been studied experimentally before. On the basis of the results obtained, scholastic aptitude is considered a function of attention, memory, perceptual ability, and possibly other mental abilities not represented in the present study.

A certain vagueness in the notion of critical flicker frequency as an indicator of physiological efficiency was noted which makes the task of the psychologist more difficult. A plea is entered for further clarification by the physiologists of the specific status of critical flicker frequency in neurophysiological theory. Further psychological study of this important phenomenon is indicated.

44 pages. \$1.00. MicA54-1931

VARIATION IN STIMULUS AMBIGUITY AND PERCEPTION OF VALUE-LADEN WORDS

(Publication No. 8651)

Barbara Snell Dohrenwend, Ph. D.
Columbia University, 1953

This study is designed to investigate the effects of two different instructions from the experimenter on the relation between value rank and recognition time of value-laden words. The procedure is a modification of that used by Postman, Bruner and McGinnies in the study in which they demonstrated an inverse relation between values and recognition times of value-laden words.

The measure of values is the Allport-Vernon Scale of Values. The measure of threshold is number of successive exposures prior to recognition of a word, the word being shown for three seconds in a field of .074 ml. brightness at each exposure. In the

study by Postman et al., the measure of threshold was the duration of the flash at which recognition occurred, duration being increased on successive exposures of a word. In both the present study and the earlier study, the threshold of each subject is measured for thirty-six words, six representing each Spranger value. In the earlier study the thirty-six words were shown in one session in which the subject was asked to report whatever he saw or thought he saw. In the present study, eighteen words are shown in each of two sessions. In one session instructions similar to those of Postman et al. are given (Phenomenal instructions). In the other session the subject is instructed to recognize each word in as few flashes as possible (Speed instructions). After each session the subject is asked about his reactions to the session and is asked to define the words he has been shown. The definitions are obtained for use as a measure of familiarity with the words.

In the present study there is a correlation of -.14 between Thorndike-Lorge word count, a measure of familiarity of words, and recognition time of words. This finding does not contradict the finding of Solomon and Howes that familiarity and duration threshold are inversely related. Quality of definition, an individualized measure of familiarity, is not, in the present study, a measure more sensitive to the relation between familiarity and threshold than Thorndike-Lorge count.

It was assumed, in the design of the present study, that the inverse relation between value rank and threshold of value-laden words, found by Postman et al., would hold when the experimenter gave the Phenomenal instructions. No relation between value and frequency threshold was found in the present study with either instruction.

The subjects' responses to the question as to what they were trying to do during the session indicate that not all subjects were able to adopt both sets. Some subjects apparently adopted the Speed set even when Phenomenal instructions were given. Analysis of the results indicates, however, that the lack of relation between frequency threshold and value rank can not be attributed to the failure of some subjects to adopt the Phenomenal set.

Analysis of the differences between the present procedure and the procedure of Postman et al. indicates that the change in the measure of threshold is associated with the difference in results. In the study of Postman et al. the "ambiguity" of each word stimulus was progressively decreased by increasing the duration of exposure of the word. In the present study the "ambiguity" of each word is not changed in successive exposures. The result of the present study suggests that the relation between value rank and threshold of word is absent when the "ambiguity" of the stimulus is not progressively decreased. Moreover, this interpretation of the result suggests that the study of determinants of perceptual responses must include investigation of the effects of interaction between determinants, such as stimulus "ambiguity" and value orientation, as well as the study of effects of individual determinants.

91 pages. \$1.14. MicA54-2144

SENSORY PRE-CONDITIONING IN THE MONKEY

(Publication No. 8890)

Dom Vincent Finocchio, Ph. D.
University of Pittsburgh, 1954

Operationally, sensory pre-conditioning refers to the following series of events: (a) an organism is given repeated presentations of two temporally contiguous stimuli (e.g., light and tone) without apparent reinforcement; (b) one of the stimuli (e.g., tone) is conditioned to evoke a response; (c) the second stimulus (light) is then presented to determine if it will evoke the conditioned response without the usual training.

The present experiment was designed to investigate (a) to what extent sensory pre-conditioning could be demonstrated in the rhesus monkey, and (b) the effect of pre-conditioning training on the rate of acquisition of an avoidance conditioned response. Moreover, from the hypothesis of the first problem it was predicted that animals receiving tone-light pretraining would in the subsequent critical test make more responses to the tone stimulus than could be accounted for by simple sensory generalization or familiarity with the test stimulus.

The subjects in the experiment were 11 pre-adolescent *Macaca mullata* monkeys. A Skinner Box adapted to the monkey was utilized as the test apparatus. It consisted of a chamber with an electric grid floor and a bar, projecting from the wall, which when depressed terminated both the conditioned stimulus and the unconditioned stimulus. The apparatus was set up to present a weak tone and light of relatively diffuse localization. The tone was a 1000-cycle pure tone from a signal generator amplified to 75 decibels about 10^{-16} watts/cm². The light stimulus was delivered from two 40-watt, red incandescent lamps.

(1) Pre-conditioning trials. Subsequent to a period of adaptation, the experimental animals received 210 trials with tone and light at 15 trials each day. One group of control animals received an equivalent number of trials with tone only. The second control group was given continued adaptation trials throughout this period.

(2) Avoidance conditioning. An avoidance response to red light was established in all animals during this phase. The conditioning procedure was as follows: The red light was presented for two seconds prior to the onset of the shock through the grid floor of the chamber. The paired presentation continued until the animal made the appropriate bar-pressing response which terminated both the light and shock. Conditioning continued at 15 trials per day until the criterion of 90 per cent avoidance responses on two successive days was reached.

(3) Critical test. The day after the conditioning criterion was achieved the tone stimulus was presented alone with the same adaptation period and inter-trial intervals that prevailed during conditioning. These trials continued until the avoidance bar-pressing response was extinguished to the 10 per cent level on two successive days.

It was necessary to use nonparametric statistics in all instances because of the large within-group variance. The H-test, which is essentially a rank analog of a one-criterion analysis of variance, was utilized.

The H-test variance analysis applied to the conditioning data indicated that none of the measures - trials to condition, conditioned responses to criterion, or spontaneous responses during conditioning - differed significantly between the experimental and combined control groups. In the critical test the experimental group made significantly more responses to the tone stimulus and also required a significantly greater number of trials to reach the extinction criterion than did the control groups. The confidence for both measures was at the two per cent point.

The conclusions drawn from the data were: (a) Sensory pre-conditioning had been reliably demonstrated in the rhesus monkey. (b) The improved control group technique had ruled out the influence on generalization of unfamiliarity with the test stimulus. (c) The rate of acquisition of the conditioned bar-pressing response had not been affected by the pre-conditioning training.

The implications of the sensory pre-conditioning experiment were discussed in relation to two major theoretical issues. 61 pages. \$1.00. MicA54-2145

IS PERCEPTUAL DEFENSE
CONDITIONED AVOIDANCE?

(Publication No. 8660)

Norbert Freedman, Ph. D.
Columbia University, 1954

The phenomenon of perceptual defense, that is, raised recognition thresholds in response to stimuli of negative affect, has been given numerous interpretations. One specific interpretation, that of viewing perceptual defense as based on secondary negative reinforcement, lead directly to the formulation of the present problem. This study attempted to determine whether perceptual defense can be elicited as a conditioned response. The hypothesis tested was that words, unfamiliar to subjects, Danish words in this study, when associated with English words of negative affect would elicit higher recognition thresholds, than Danish words previously associated with English words of neutral affect.

Thirty female undergraduate students were presented with three lists of word pairs, each pair consisting of a Danish word and an associated English word of either neutral or negative affect. Subjects were asked to associate these pairs to the three different learning criteria of one, three, and five correct repetitions of items in each respective list. Approximately one week later the Danish words were exposed tachistoscopically, using the method of constant stimulation for each of five levels of light intensity. The subjects' recognition of affect-associated Danish words was compared with their

recognition of neutral-associated Danish words in an effort to test the validity of the major hypothesis.

When recognition for the two categories of Danish words was compared under a number of conditions of exposure, differences were consistently no greater than chance. Furthermore, there was no systematic variation in recognition preferences for affect or neutral-associated items as a function of the criterion to which the association had been learned. The possibility was explored that differences in recognition were obscured, owing to variability among affective items, or among individuals. Neither recognition of extreme groups of affect-associated items, nor recognition by extreme subject groups (independently defined in terms of their approach or avoidance of affective words) of extreme items, yielded significant discriminations. Thus, conditioned perceptual defense was clearly not established.

In view of the negative results reported here, the discussion attempted to account for the discrepancy between predicted and obtained findings. One possible explanation raised was that the unconditioned English words may have been incapable of eliciting perceptual defense. This possibility was held unlikely in view of the significant discriminations which subjects revealed to the affective English words, and in view of collateral evidence from the literature. A second possibility was that negative affect, originally evoked by affective English words was not transferred to the Danish associates during the learning session. Several processes were described that might have prevented a transfer of affect; yet these processes were judged to be insufficient to account for the sweepingly negative results, especially since one week after learning, the Danish words were still eliciting affective discriminations - if recall is used as a criterion of affect.

Some factors were suggested that might have prevented the occurrence of perceptual defense despite the apparent presence of negative affect at the time of tachistoscopic exposure: (a) affect arousal was weak, (b) non-affective, task-oriented responses during perception may have become prepotent over weak affective responses, and (c) Danish words having the status of non-sense words, do not convey any information relevant to established avoidance behavior.

The results of this study were finally related to the problem of perceptual defense. The general proposition that perceptual defense is based on secondary negative reinforcement is not challenged by the data of this study. It was pointed out, however, that (a) perceptual defense is not a necessary consequence of stimulation by negative affect, and (b) for perceptual avoidance to occur the stimulus must convey specific information which is relevant to the subjects' repertoire of avoidant behavior.

157 pages. \$1.96. MicA54-2146

THE ACQUISITION OF A THIRST DRIVE

(Publication No. 8548)

Irvin Greenberg, Ph. D.
University of Pennsylvania, 1954

Supervisor: Mortimer Garrison

Previous studies in the area of acquired drive have most generally dealt with the avoidance of electric shock, in a few instances with the learning of a food or hunger drive. Because the temporal locus of drive reduction cannot be clearly demonstrated in the shock studies, and the extended period of drive arousal in the hunger studies can provide no adequate condition of stimulus onset, neither type of experiment has been able to afford definitive evidence regarding the drive reduction hypothesis of Miller or the stimulus-onset hypothesis of Mowrer.

Dehydration induced by hypertonic saline solution injection enables control of the arousal and reduction of a thirst drive, and both aspects of the drive may be made to occur within comparatively short periods of time. This technique, developed by Heyer, thus seems well suited to test the hypotheses:

1. A neutral stimulus accompanying the onset and/or increase of a primary drive will come, through repeated association, to evoke the behavior characteristic of that drive in the absence of conditions ordinarily requisite for such behavior.

2. A neutral stimulus accompanying the reduction of a primary drive will come, through repeated association, to elicit behavior characteristic of the drive in the absence of conditions ordinarily requisite for such behavior.

The following procedure was used. Thirst was induced in two groups of 21 laboratory rats by hypodermic injection of 15% saline solution, in two other groups of 10 each by 22-hrs. water deprivation. For one injection group, the neutral stimulus of a blinking light was paired with the period of rapidly developing thirst; for one deprivation group it was paired with a 30-min. period of continuing or ongoing thirst. For the two other groups the same stimulus was present during the period of drive reduction (drinking). After 25 training trials in a distinctive cage the animals were tested for drinking response to the blinking light with the thirst-including conditions omitted. Each animal served as its own control, test trials in which the light was present being compared with equivalent trials in which it was absent. Comparison was also made between the several groups without regard to presence or absence of the light.

Results indicate no significant differences between test and control periods of individual animals of any group. There is, however, a trend toward significant differences between the two injection groups. That group for which the training cage period coincided with a rising drive state is superior to the drive reduction group in both amount and incidence of drinking.

These results were interpreted as indicating that the stimulus-onset condition is conducive to drive learning. The absence of differences between test and control periods of individual animals, considered

in conjunction with the found differences between the two injection groups, suggests the need of a reformulation of both the stimulus-onset and drive-reduction hypotheses that would take into account the nature and function of the neutral stimulus.

24 pages. \$1.00. MicA54-2147

THE RELATION OF AREA AND LUMINANCE TO THE THRESHOLD FOR CRITICAL FLICKER FUSION

(Publication No. 8705)

Solomon Kugelmass, Ph. D.
Columbia University, 1953

The relationship of CFF to area of the test patch was examined using thirty-six different sized patches ranging from 1.27 degrees to 14.60 degrees of visual angle. Using white light, central fixation, surround illumination, and five different levels of luminance, the CFF-log area relationship was studied using a light-dark ratio of 0.5 between 15 and 45 cycles per second. Additional data were obtained by varying luminance systematically with five different sized patches. Three trained observers served as subjects.

(1) The data indicate that the relationship between CFF and log area of the test patch when graphically represented may best be described as negatively accelerating function.

(2) The data do not seem to indicate any systematic discontinuities in the CFF-log area function that can clearly be associated with the first occurrence of rods in the foveal area being stimulated.

(3) The data indicate that the level of luminance influences the slope of the CFF-log area function.

(4) Among other determinants, age may affect the CFF-log area functions.

37 pages. \$1.00. MicA54-2148

SEXUAL BEHAVIOR BEFORE AND AFTER PSYCHOSURGERY

(Publication No. 8758)

Wardell Baxter Pomeroy, Ph. D.
Columbia University, 1954

In response to an invitation from the Columbia Greystone Associates, the writer, in conjunction with the program of the Institute for Sex Research, examined the patients included in the Columbia Greystone studies and the New York State Brain Project studies with reference to their sexual behavior before and after psychosurgery.

Preoperative sexual histories were obtained on 95 subjects which included all of the 112 patients capable of cooperating. Two to four years after psychosurgery 63 of these same subjects were available for a follow-up study of their sexual behavior.

A check on the reliability of report was made by comparing original histories, given before the

operation, with retakes, given 33.9 months later. Originals and retakes on a control group of 260 subjects from the general population with a similar time lapse (36.1 months) between histories was available for comparison. The experimental group was about as accurate in regiving the same story a second time as was the nonpsychotic control group.

Three experienced judges independently rated each history as to its validity on a four-point scale. Only those histories judged "valid" or "approximately valid" by at least two of the three judges were used in the subsequent analyses of the data.

There was very little change in total sexual outlet postoperatively, among either males or females while they were still hospitalized. For the two years immediately before hospitalization, sixteen males reported an average outlet of 2.2 per week. After operation and after release from the hospital their outlet dropped to 1.0 per week. Possible explanations for this drop are: (1) The subjects were 7 years older and their outlet could have been expected to have dropped 0.7 per week over this period of time. (2) They may have been "sexually inhibited" while trying to readjust socially. (3) Many were in new environments and new jobs. (4) Only sixteen males were available for analysis which means one or two with radical drops could have thrown off the group average. (5) Brain operation may, in actuality, have had some effect in reducing the amount of sexual activity.

Eight females, on the other hand, showed almost exactly the same frequencies of total outlet before and after hospitalization.

Essentially the same number of sexual outlets was utilized by males before and after operation and while still in the hospital (1.3 vs. 1.2). This is also true for the females (0.3 vs. 0.3). However, while out of the hospital, males used 2.2 different kinds of outlet before operation and only 1.7 different kinds after operation. For the females, 1.5 different outlets were used before operation to 1.0 different outlets after operation. Of 34 males asked, 19 reported they recognized no change in their sexuality after operation. Two males reported doubt as to any change, five reported decreased sexuality and eight reported increased sexuality.

Of the 29 females asked, 19 reported no change, three reported doubt as to any change, five reported decreased sexuality and two reported increased sexuality.

In only a portion of the male and female histories, however, did the actual record coincide with their reported changes in sexuality following operation.

Although individual cases in this study sometimes showed an increase or a decrease in sexual behavior following any one of a variety of psychosurgical brain operations there was no consistent trend for the group taken as a whole. At this point it is not possible to differentiate effects on sexual behavior between various types of operations. Whatever psychosurgery may do to change either the emotional or intellectual life of the patient, we found no evidence that it clearly alters their sexual responses or behavior.

50 pages. \$1.00. MicA54-2149

RELIGION

THE SOCIOLOGICAL DEVELOPMENT OF THE TABORITE MOVEMENT

(Publication No. 8237)

Zdenek Frantisek Bednar, Ph. D.
Boston University School of Theology, 1954

The purpose of this study is to present a sociological analysis of one phase of Hussitism: the Taborite movement. This movement, the knowledge of which in the English-speaking world is very inadequate, presents a splendid example of an attempt to realize the absolute Christian social order, as well as an example of the development of ideas, movements, parties, groups, and sects from one ecclesiastical idea. The dissertation takes critical account of the causes, ideas, and influences which led to the development of the Taborite movement and finally to the establishment of the community of Tabor; and it attempts to state to what degree these causes, ideas, and influences were religious and to what degree they were the results of the social, economic, political national, and military situation.

In sum, this analysis ascertains that the Taborite movement which through the "warriors of God" strove to impose the Evangelical Law upon the life of society and which through the exaltation of the Law of God destroyed the whole Catholic dogma of the Church was far from being merely a social movement under religious veiling as interpreted by Marxist historians. Although the social crisis which was affecting all classes of Czech society in the pre-Taborite period strengthened the receptivity of the Czech people to the Hussite ideas, the Taborite movement was basically a religious movement and its most revolutionary ideas developed out of the chiliastic expectation of God's intervention into history.

Secondly, this investigation finds that the Taborite movement was far more complex than "pure and simple" Wyclifism as maintained in the theories accepted from Johann Loserth. Except for the doctrine regarding the chalice, the predecessors of Hus introduced the main principles of the movement: the Church must return to the principles of the Early Church, it must be poor and free of pomp and ceremony, the Gospel must be preached freely and in the vernacular, Christ and the Scriptures alone are the authority of the truth, history is the struggle between Christ and Antichrist, and it is necessary to struggle against Antichrist as spiritual knights. The sources of the extreme revolutionary ideas of the Taborites (Holy war, sovereignty of the people, equalitarian-communist conception of the State, Lord's Supper under each kind, etc.) which cannot be fully explained by the thoughts of either Hus or Wyclif, and the roots of which have long been sought, were found in the thoughts of the predecessors of

Hus and in the influence of Pseudochrysostom, Marsiglio of Padua, Nicholas of Dresden, and the Piccards. Under the influence of Wyclif the radical Hussites were led to historical criticism which brought about the "discovery" of the chalice and the insistence on the Lord's Supper under each kind. In their search for truth they became acquainted with the main tenets of Marsiglio of Padua under whose influence the right of the nobles to defend the Law of God with the sword was extended to the common man.

Thirdly, this dissertation concludes that the sectarian tendencies of the Taborites are greatly outweighed by their missionary zeal which is in sharp contrast to the characteristic of a sect as a fellowship whose aim is the preservation of the Christian ideal in a small community. It is emphasized that the Tabor community, which was fashioned according to the principles of the Early Church and based on communism of love, was not a place of refuge but a fortress and a model community in accordance with which all other communities were to be Christianized. The Taborites, who frequently are typed as sectarian, appear to represent an aggressive movement within a movement, or a party, rather than a sect of the Hussite movement.

321 pages. \$4.01. MicA54-2150

A COMPARATIVE STUDY OF THE THEORY OF HUMAN NATURE AS EXPRESSED BY JONATHAN EDWARDS, HORACE BUSHNELL AND WILLIAM ADAMS BROWN, REPRESENTATIVE AMERICAN PROTESTANT THINKERS OF THE PAST THREE CENTURIES

(Publication No. 8608)

John Arthur Boorman, Ph. D.
Columbia University, 1954

In this dissertation, the theories of human nature held by Jonathan Edwards, Horace Bushnell and William Adams Brown are expounded and compared; and on the basis of the comparison, suggestions are made as to the lines along which a theory of man might be reconstructed in the light of current thought. The men selected are considered representative of the past three centuries, not because their views were typical, but because each was a controversial leader who stood at the beginning of a new stream of Protestant thought in America.

Jonathan Edwards was not a typical Puritan, but he accepted as his central principle the Calvinistic doctrine of the absolute sovereignty of God. His theory of human nature reflects the consistent application of this principle, combined with the idea of radical conversion which accompanied the Great

Awakening – a synthesis which found expression in what is called the New England Theology. To support his views, Edwards made use of certain philosophical ideas of Locke, Newton and Hutcheson.

Horace Bushnell rejected Calvinism, but unlike the Unitarians, with whose views of human nature his own bear some resemblance, he remained within the Congregational Church. Impressed by Coleridge's idealism, and reflecting a popular emphasis upon the rights and dignity of man, his theory of human nature is more optimistic and moralistic than Edwards'. Bushnell's distinctive tenet about man was that man is a "being supernatural," who is superior to natural laws of causation, and who recognizes analogies between the natural realm of things and the supernatural realm of powers. Moreover, he regarded morality and religion as coincidental, and particularly in his early writing, stressed the gradual development of Christian character in place of conversion.

There was no abrupt transition from the New Theology which originated with Bushnell and the type of liberalism represented by William Adams Brown's thought. But Brown's theory of human nature was developed on the basis of the new Darwinian science, in accordance with which, the supernatural is simply the natural seen in its true meaning. Man's continuity with the natural world is explained through his position in the evolutionary process, his spirit being an emergent from his lower nature. Brown's eclecticism, as well as his emphasis upon the importance of experience as a "pathway to certainty," are indicative of the influence of scientific method, which requires a dispassionate weighing of different viewpoints in order to gain understanding. Man's responsibility for human progress through active participation in the church and other institutions was an important element in Brown's thought.

Suggestions for a reconstruction of the theory of human nature are based on the presupposition that man owes his existence to the God whom Christians believe was supremely revealed in Jesus Christ. The concept of the divine image in man, and the problem of human sin must be reinterpreted on the basis of a fuller recognition of the psycho-physical unity of human nature. Man's creativity, but also his destructiveness, should be acknowledged. Inner conflicts may be regarded as conflicts of "man against himself" in which the "unconscious" plays an important role. The influence of society on man, both for good and evil, must not be minimized. Yet the primary fact about man is that he is a child of God, who cannot overcome sin and fulfill his potentialities without divine assistance. But love to God, love to man and self-love must be correlated, since man shows his gratitude to God for the gift of life, and affirms his own creative possibilities, through the service of his fellow men. 222 pages. \$2.78. MicA54-2151

THE MICROCOSM BY JOSEPH IBN ZADDIK,
TRANSLATED FROM THE HEBREW WITH
INTRODUCTION AND NOTES

(Publication No. 8676)

Jacob Haberman, Ph. D.
Columbia University, 1954

The present thesis is a translation from the Hebrew with an introduction and notes of the Microcosm by Joseph Ibn Zaddik. Ibn Zaddik was a Spanish-Jewish philosopher who died in 1149. His major work, the Microcosm, has never before been translated into any modern language. The work was originally composed in Arabic, but the Arabic original has been lost and only an anonymous Hebrew translation of it has survived. An excellent critical edition of the Hebrew text was published by S. Horovitz, Der Mikrokosmos des Josef Ibn Saddik, (in the "Jahres-Bericht" of the Jewish Theological Seminary of Breslau) Breslau, 1903. This text is a composite one, being based on several manuscripts and adopting the reading now of this and now of that manuscript.

The translator desires to state that in his translation he has generally followed Horovitz's text in connection with the corrections listed by Horovitz himself in the appendix of his edition. In comparing the editor's text with the variations listed in the critical notes, the writer has on rare occasions found one of these readings preferable to the one adopted by the editor, or at least worthy of consideration. In these instances, he has noted the fact in the notes on the translation. The exact sources of the biblical and rabbinical quotations only incompletely given by Horovitz in his text have been indicated in the notes.

The following subjects are dealt with in the general introduction: The Life and Works of Joseph Ibn Zaddik, Previous Studies of Ibn Zaddik's Work, The Nature and Purpose of the Microcosm, The Universe Considered as a Microcosm, The General Tendency of the Microcosm, A Summary of the Contents of the Microcosm.

Leopold Weinsberg's hypothesis that the Microcosm is not a genuine work by Ibn Zaddik but a late forgery is examined in detail and rejected. The place of Ibn Zaddik in the transition from Kalam and Neo-Platonism to Aristotelianism in medieval Jewish philosophy is discussed, and an attempt is made to demonstrate that the succession of these schools and the final triumph of Aristotelianism in medieval philosophy was determined by logical necessities and not merely by accidental circumstances. Finally, Ibn Zaddik is considered as a typical medieval Jewish philosopher, and the basic assumptions of such a philosopher are critically examined.

The Microcosm is divided into four treatises, the contents of which may be indicated as follows. In the first treatise, after considering the sources of knowledge and other epistemological matters, the author treats, in the manner of the Arabic Aristotelians, of matter and form, and substance and accident, which are conceived as existing in both material and spiritual things. The structure of the world is discussed and evidence is offered to prove its corruptibility.

The treatise concludes with the microcosmic analogies between man and the universe from which the work derives its title. The second treatise discusses psychological and physiological matters. The existence of three souls (vegetative, animal, and rational) is ostensibly proved, and their functions are discussed in detail. The last two treatises are devoted to theological and eschatological matters. Such subjects as the existence and attributes of God, reward and punishment, repentance, the resurrection of the dead, and the Messianic Age are dealt with.

335 pages. \$4.19. MicA54-2152

DIVINE LOVE IN PRE-EXILIC HEBREW LITERATURE

(Publication No. 9206)

Joseph Ralph Jolly, Ph. D.
Vanderbilt University, 1954

Supervisor: Professor J. Philip Hyatt

I. Problem. The idea that there is a great difference between the Old Testament conception of God and that of the New Testament is widespread. Sometimes this idea gives rise to the belief that the Old Testament deity is in all respects inferior to that of the New Testament. The purpose of this study is to examine the Hebrew literature that comes from the pre-exilic period to determine what evidence there is of divine love in this literature, to see how the idea is expressed, and to study its implications.

II. The Terminology. A number of words are used to express the concept of love in Hebrew. ʾAhēb is the most common word for love – both secular and religious. Hēsed is used to express the idea of loyalty to the covenant relationship and may be accurately translated by "faithful love." Hāshaq, hābab, and ʾagab are also translated by the English word, "love." Dôd and yādīd are used to mean "beloved" and "lovely." Four other words that are related to the idea of love are: rāham, "to be compassionate," hānan, "to show mercy," hāphēs, "to delight in," and rāsāh, "to be pleased with." All of these words are studied in this thesis and it is pointed out that each of them is related to the concept of love. While this thesis is more than a word study, it includes the investigation of the meanings of these words.

III. The Concept of Love. Love is too often loosely defined. It must be seen to include both feeling and will and to be a personal force (emotion and intellect) that impels one to have a deep regard for and devotion to another. It may be accompanied by a yearning or desire for the other person. The Old Testament contains many references to both secular and religious love. The two are related and an understanding of secular love enables one to grasp the idea of religious love more clearly. The ideas of the covenant and of election are basic to the concept of religious love.

IV. Specific Literature. Beginning with the earliest fragments of literature, and continuing the study of documents through the time of the Deuteronomistic redactions, the references to love are studied.

Hosea and Deuteronomy stand out as major sources, but references to God's love are found throughout the pre-exilic literature.

V. The Nature of God's Love. Divine love is personal, spontaneous, and constant. It does not contradict God's justice and righteousness, but His justice is tempered by His love. Righteousness at times includes the concept of mercy. Because of His love, God is conceived by Jeremiah as being willing to form a new covenant in men's hearts. Love is creative and persistent. Although much is said of God's love toward the nation, there is sufficient evidence to show that divine love is directed toward the individual as well.

VI. Conclusion. In spite of the fact that concepts are not always clearly presented nor systematically developed in the Old Testament, careful examination shows that the concept of love may be seen in the texts of the various books. Divine love is a broad concept and is included at times in more general ideas, but it is present in the Old Testament and recognition of the fact gives a clearer and more accurate concept of the deity as the Hebrews thought of Him.

222 pages. \$2.78. MicA54-2153

PRESBYTERIANS AND THE RELATION OF CHURCH AND STATE: AN INTERPRETATION OF THE PRONOUNCEMENTS MADE IN THE MEETINGS OF THE GENERAL ASSEMBLIES OF THE PRESBYTERIAN CHURCH IN THE U. S. A. AS RECORDED IN THE JOURNAL OF THE GENERAL ASSEMBLY, 1789-1953

(Publication No. 7993)

William Barr McAlpin, Ph. D.
University of Pittsburgh, 1954

This is a study of the pronouncements of the General Assembly of the Presbyterian Church in the United States of America from 1789 to 1953 on all those issues which this Church has considered to lie within the realm of the relation of Church and State. The General Assembly of the Presbyterian Church in the U. S. A. is the official body of the Presbyterian Church in the U. S. A. It is composed of one minister and one elder from every 24 churches in each presbytery of the Church and meets annually at a place chosen by the previous General Assembly. Through its actions on Overtures, Memorials, Communications, Resolutions, and Committee Reports, it sets forth the official pronouncements of the Church, and conducts all other business of the Church as a national denomination. The study begins with the pronouncements of 1789, the year of the organization of the General Assembly, and concludes with the pronouncements of 1953.

The Presbyterian Church in the U. S. A., through its Constitutional Statements, declares its position as regards the relation of Church and State. This dissertation is a study of the interpretation by the Church of its Constitutional Statements in the specific actions it has taken in the past 164 years in relation to the Federal Government of the United States of America,

whose Constitution declares in the First Amendment to the Constitution:

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof, or abridging the freedom of speech or of the press; or the right of the people peaceably to assemble and to petition the Government for a redress of grievances.

The issues which the Presbyterian Church in the U. S. A. have declared to be the concern of both the Church and the State include: Sabbath Observance and Temperance, Slavery, Civil Liberty, Attitude toward War (including general statements against War and pronouncements on the Chaplaincy, Conscientious Objection to War, Conscription, and other matters), Education, Minorities in American Life, Religious and Civil Freedom in Other Nations, Economic and Industrial Conditions in American Life, and other items of somewhat lesser importance.

At the conclusion of the dissertation, there is a comprehensive index of the pronouncements of the Presbyterian Church in the U. S. A. from 1789 to 1953, as they pertain to the relation of Church and State, taken from The Journal of the General Assembly (the Assembly's official minutes). The index will be of considerable help to those who wish to make further studies in this field.

199 pages. \$2.49. MicA54-2154

THEORIES OF THE SOCIAL ORIGIN OF RELIGION IN THE TRADITION OF ÉMILE DURKHEIM

(Publication No. 8725)

Horace Neill McFarland, Ph. D.
Columbia University, 1954

Though the effort, formerly so prevalent, to discover the single life-factor by which to account for the origin of religion has now been abandoned as being unprofitable, the fact remains that this search contributed to the development of a number of important theories concerning the essential nature, the systematic structure, and the function of religion as a universal cultural phenomenon. Therefore, some of these earlier emphases have been retained – though in divorcement from the quest for origins – and in modified forms still are being proffered, for the consideration of historians of religion and others, as the guiding principles for new researches in religion.

This condition prevails with respect to the sociological theory of Émile Durkheim, developed definitively in *Les formes élémentaires de la vie religieuse* (1912). While this exposition is an anachronism in terms of the status of anthropological knowledge at the time of its publication, Durkheim's principal emphasis, that "religion is something eminently social," and the two concomitant notions, (1) that religious ideas, as "collective representations," are symbols of society itself, and (2) that the religious emotion is

the élan generated in the collective action of the social group, have become highly suggestive doctrines in subsequent empirical studies. There is indeed, even now, a recognizable Durkheimian tradition of religious studies in which the influence of the French sociologist is consistently manifested.

As a sociologist Durkheim is the most eminent successor to Comte in the French positivist tradition, but his work in religion is also of the lineage of the pioneer studies of totemism as begun systematically in 1869 by MacLennan and as continued by Robertson Smith. Durkheim's tenets, however, have become an effective influence in several diverse areas of scholarship. For example, Miss Jane Harrison, a British classicist, applied the Durkheimian principles, through her studies of Greek ritual in *Themis* (1912), to the attempted reconstruction of the social origins of Greek religion. Also, Henri Bergson, while he opposed the mechanistic and positivistic position which Durkheim represented, was influenced by his fellow countryman in his description of "closed morality" and "static religion" in *Les deux sources de la morale et de la religion* (1932); though Bergson's stress upon intuition and the creative role of individual mystical experience removed him to the periphery of the Durkheimian tradition and rendered him less a follower than a critic of its essential features.

In our time the Durkheimian tradition largely has been merged with the so-called "functionalist" school in the social sciences. This approach is, in its relation to the Durkheimian emphasis, especially evident in the work of such British anthropologists as Radcliffe-Brown and Malinowski and among American sociologists of the Parsonian school. Among the latter, particularly in William J. Goode's *Religion among the Primitives* (1951), we find the "growing edge" of the Durkheimian tradition and the promise of increasingly useful sociological analyses of the interrelatedness of religion and other aspects of culture.

Still, in the formulations of this tradition, there is the disturbing tendency to regard society as the central reality and to represent the individual inaccurately as an abstraction, possessing insufficient autonomy and inner resources to translate creatively his own experiences and thoughts into religious patterns. It is evident, therefore, that for understanding the total meaning of religion in human life the sociological approach is in itself inadequate and requires augmentation from other objective studies and from evaluative studies as well. Nevertheless, it also is true that when the harshness of the social determinism and mechanistic outlook, characteristic of this tradition in an early stage, has been relieved, there is left a body of principles which may be profitably, if cautiously, employed by the historian of religion – eclectic as he perforce must be.

309 pages. \$3.86. MicA54-2155

PROTESTANT COOPERATION IN
RELIGIOUS EDUCATION IN SELECTED
PENNSYLVANIA COMMUNITIES

(Publication No. 8909)

Robert Richard Powell, Ph. D.
University of Pittsburgh, 1954

This is a study of the 1950 interdenominational religious education activities of 972 churches, most of which are in 11 scattered Pennsylvania counties. The data were obtained by means of a local church questionnaire, interviews and correspondence with officers of interdenominational agencies, and from interdenominational and denominational records. They include identification of interdenominational religious education enterprises, of the agencies that sponsored them, and of the local churches that participated in them. The data were treated descriptively and statistically, and related to a group of questions regarding interdenominational cooperation on the county and subcounty levels. Among the findings are the following:

Of the churches 89.6 per cent participated in interdenominational activities and 84.5 per cent took part in cooperative religious education.

Although 71 different types of enterprises were reported, seven types account for 63.7 per cent of the local church participations. Leadership education enterprises account for 34.9 per cent, youth enterprises for 27.4 per cent and children's enterprises for 26.4 per cent.

There were parallel and duplicating agencies in most communities. The average church was related to 2.6 of them. Fifty-five per cent of the enterprises were not related through sponsorship to other local cooperative religious education. Agencies related to the National Council of Churches of Christ in the U. S. A. make up 49.6 per cent of the agencies, account for 61.1 per cent of the participations, and were referred to by 61.7 per cent of the churches. Agencies opposed to the National Council and emphasizing doctrinal agreement make up only 9.2 per cent of the agencies, account for 4.6 per cent of the participations, and were referred to by 8.2 per cent of the churches. Agencies related to neither the National Council nor to the doctrinal emphasis movements account for 35 per cent of the participations.

Churches of denominations related to the National and/or State Council cooperate more than other

churches: 86.3 per cent compared with 66.3 per cent. The four largest denominations in Pennsylvania - Methodist, United Lutheran, Presbyterian, Evangelical United Brethren - were more alike in participation than different, with the Lutherans having the best cooperative record and the Methodists the poorest. Sixty-eight per cent of the churches took part in both cooperative religious education and denominationally sponsored religious education beyond-the-local-church while only 25.5 per cent participated in only one or the other. Six and one-tenth per cent of the churches in council denominations participated in enterprises of the anti-council movements while 29.2 per cent of the noncouncil churches participated.

In the sample the larger the church membership the more likely the church was to participate in cooperative religious education. A greater percentage of churches with fewer than 100 members used religious education as the sole channel for cooperation. There were no significant differences between churches of various sizes in their preferences for certain religious education enterprises. A smaller percentage of churches with fewer than 100 members participated in enterprises of the council agencies while a greater percentage of churches with more than 300 members participated in enterprises of anti-council agencies.

In the sample, community size made no significant difference in the percentage of churches participating in cooperative religious education, although a smaller percentage of churches in communities with less than 1,000 population participated in religious education plus other types of interdenominational enterprises. A larger percentage of rural churches than urban used religious education as the sole channel for cooperative expression. Urban churches rank above rural in participation in weekday church schools, Standard leadership schools, athletic leagues, and district youth conferences, while rural churches outrank urban in participation in both district and county Sunday school conventions. There is no significant difference between urban and rural participation in cooperative vacation church schools. Churches in communities with 1,000 to 10,000 population rank below churches in both larger communities and smaller communities in participation in enterprises of council agencies, while they rank above them both in participation in enterprises of anti-council agencies.

291 pages. \$3.64. MicA54-2156

SOCIAL PSYCHOLOGY

SUBGROUP COMPARISONS IN VALUE PREFERENCES

(Publication No. 8708)

Irving Lazar, Ph. D.
Columbia University, 1954

Two hundred twenty-four students and thirty-eight faculty members, comprising almost all of the members of a small undergraduate liberal arts college, ranked thirty-nine social and educational evaluative items derived from an open-end questionnaire which had been administered earlier. Thirty sorority members at a midwestern state university and a random group of fifty persons at a large railroad station also ranked these statements.

Retest reliability coefficients ranged from .28 to .87 with a median of .74.

The student and faculty subjects were successively regrouped in terms of their academic status, their eventual graduation and a variety of indices of their social and scholastic situations and backgrounds. Coefficients of concordance within these subgroups were compared for studies of intra-group homogeneity. Product moment correlations between arrays of mean ranks were computed for studies of inter-group agreement.

The thirty-nine evaluative statements were grouped into four kinds of categories for explanatory purposes:

1. Scholastic: (a) Intellectual Ability, and (b) Academic Achievement.
2. Interpersonal: (a) Individualistic (b) Collateral, and (c) Dependent.
3. Valued Personality Traits: (a) Self-satisfaction, (b) Development of Potentialities, and (c) Accomplishment.
4. Orientation to Time: (a) Present, and (b) Future.

Students preferred items referring to Intellectual Ability, Individuality, and Orientation to the Future. They rejected items dealing with dependent relationships.

Testing a series of hypotheses, the findings indicated that:

1. The random group was entirely heterogeneous in their ranking.
2. The college groups were significantly homogeneous in their ranking.
3. Students from the two colleges agreed as to which traits they preferred and as to which they assigned the lower ranks.
4. The faculty group was more homogeneous than their students.
5. Faculty and students agreed as to the ranking of these items.
6. Categorized by length of teaching experience,

faculty subgroups did not differ in the extent of their homogeneity, nor did they disagree in their preferences.

7. Seniors' rankings more closely resembled the faculty's rankings than did the Freshmen's rankings.
8. Seniors were least homogeneous in their ranking. Freshmen were most homogeneous.
9. Students who subsequently graduated did not disagree as to the average rank order of these statements with students who subsequently dropped out of school without graduating.
10. While subsequent graduates agreed with the faculty's rankings, subsequent non-graduates differed from the faculty, assigning their highest ranks to items dealing with interpersonal relationships whereas the faculty assigned their highest ranks to items dealing with scholastic values.
11. Neither graduates' nor non-graduates' ranks agreed with those assigned by the random group.
12. Studies of differences in concordance produced by various bases for subgrouping led to the conclusion that situational and scholastic attributes were more productive of differences in homogeneity than were background or extra-scholastic attributes of the subjects.
13. Certain differences in homogeneity not consistent with (12) above were found for such factors as religion and sex. It was proposed that these were cases where transferable training changes the meaning of social situations for people in certain specified ways, and defines situational roles for them.

Three General conclusions are drawn from these findings:

- A. Preferences for social symbols are primarily related to factors specific to the situation in which the symbols are selected. This specificity is of a degree that does not produce homogeneity of choices in the culture at large, and only low levels of homogeneity within even so well defined a social structure as a college.
- B. The facts of a person's background are related to his preferences for certain social symbols to the extent that these background learnings are directly transferable to this present situation or define certain social roles and stereotypes for individuals.
- C. It is suggested that the extent of homogeneity in value orientation found in a group may be positively related to the degree of situational insecurity the group members share.

189 pages. \$2.36. MicA54-2157

**A STUDY OF ATTITUDES OF MOTHERS
OF SCHIZOPHRENICS AND NORMALS
FROM DIFFERENT SOCIO-ECONOMIC
LEVELS TOWARD CHILD BEHAVIOR**

(Publication No. 8711)

Avrom Aaron Leve, Ph. D.
Columbia University, 1953

The importance of the family as an influence on the child's development has been accepted by students of personality, in some degree or other, since the theoretical developments of Freud. In attempting to explain the problem of the etiology of schizophrenia, there are some psychopathologists who suggest that essentially the mother is reacting to her perception of an organically defective child while there are others who claim that the mother is projecting her own inadequacies onto the child. Either way, both factions agree that mothers of schizophrenics are overprotective, controlling and domineering in some way toward the schizophrenic offspring.

Recently there have been many attempts to ascribe differences in attitudes toward any number of variables to the realm of social class. In the area of adjustment the results of many experimenters differ as to interpretation but they do highlight the claims that there are differences between socio-economic classes in attitudes toward social values and practices.

The present study is an attempt to investigate some of the variables that may be meaningful in some of the accepted generalizations about a clinical population. It is hypothesized that there is a difference in the attitudes toward child rearing and development between parents of schizophrenics and parents of nonschizophrenics. This difference will be of statistical significance on the total scale scores of a scale measuring good mental hygiene attitudes. To test the findings of previous experimenters that groups may be identified on a socio-economic basis, it was further hypothesized that there would be more consistency of attitude among mothers of the same socio-economic status, regardless of the normal-schizophrenic difference, than among mothers of differing socio-economic classes. Following the thinking of Davis and Havighurst, it was also hypothesized that on the five subscale scores, the lower socio-economic groups would obtain "better" or higher scale scores, thus showing more healthy attitudes, than the scores obtained by the middle socio-economic groups.

The procedure was to comb the literature on parent-child relationships in schizophrenia for items that were indicators of mental hygiene attitudes. These were submitted to five clinical psychologists, all Ph. D's with at least two years of clinical experience, to select only those items which they considered to have relevance to mental hygiene attitudes. Agreement by four of five judges was necessary for an item to be used. Then the judges were asked to separate these items into five subgroups which represented different areas of the parent-child relationship. Three of these groupings were taken from the

Fels Institute Scale as finally evolved by Baldwin, Kalhorn, and Breese while the other two groups represented recognized problem areas. Again agreement by four of the five judges was needed to place an item in a subgroup and the final scale consisted of a pool of 122 items.

The population consisted of 120 biological mothers who had raised their children through adolescence with an intact family constellation. Sixty mothers had at least one clinically diagnosed schizophrenic offspring while the other sixty had no schizophrenic offspring. Each group of sixty was split into two groups of thirty representing combined middle and lower socio-economic status according to the Warner, Meeker, and Fells Index of Status Characteristics. Within each of the four groups of thirty, there were equal numbers of Protestants, Jews, and Catholics.

The data were handled by the analysis of variance technique with all first order interactions calculated. When significant F ratios were found, the data were then examined by means of the t test. The only significant ratios were found for the variables of socio-economic status and parent or nonparent of a schizophrenic. On the basis of this procedure it may be concluded that parents of nonschizophrenics obtained significantly higher or better scores on the mental hygiene scale than did parents of schizophrenics. Also while lower socio-economic class parents of normals obtained significantly higher scores than middle class parents of schizophrenics, thus reflecting the hypothesis of consistency of attitudes for the same socio-economic level, they obtained significantly lower scores than the middle class parents of normals. There was no substantiation of the Davis and Havighurst thesis that lower class mothers have more desirable attitudes toward the various areas of child behavior and development.

86 pages. \$1.08. MicA54-2158

**DEVELOPMENT OF AN INSTRUMENT FOR
THE ANALYSIS OF THE SOCIAL GROUP
WORK METHOD IN THERAPEUTIC SETTINGS**

(Publication No. 8486)

Henriette Etta Saloshin, Ph. D.
University of Minnesota, 1954

The mounting interest in the utilization of groups for therapeutic purposes has led - among other effects - to a confusion regarding the distinctions between different methods of working with groups. The conviction that this confusion can be reduced if at least one of the several methods can be clearly defined, gave impetus to the formulation and conduct of this study.

The main purpose of this study, therefore, is to provide an orderly and defined classification of the main components of the social group work method.

A pilot study preceded the main study. From the pilot study four broad categories were identified as the main components of the social group work method. Each of these categories was broken into classes and

sub-classes. The whole, rationally organized, became the system for classifying recorded social group work method drawn from actual practice.

The project constitutes a test of this classification system. A sample of narrative group records – obtained from different psychiatric agencies – was divided into small incidents, each representing one operation of the worker. A total of 20 group sessions and of 763 incidents comprise the study material. Five expert judges scored each incident according to the suggested classes for all four categories.

Scores were tallied and tabulated and each item was weighted on the basis of a predetermined agreement scale. Items were accepted for a class if they received four or more agreements. The mean percentage of acceptances exceeded 50% for all main categories, ranging from 53.2% for "Activities" to 79.2% for "Members."

A class was considered valid if it received at least three acceptances. All but one class appeared more than ten times. Several sub-classes were found to be not valid. This led to a revised classification scheme whose main headings are:

<u>Activities</u>	<u>Tools</u>
Accepting	Use of self
Relating	Group interaction
Enabling and supporting	Program
Limiting	Knowledge
Guiding	Agency
Alleviating	
Interpreting	
Observing & evaluating	
Planning & preparing	
<u>Communication</u>	<u>Member</u>
Verbal	One individual
Gestural	Two individuals in interaction
Purposeful neutrality	
No communication	Total or sub-group

A description of the classes follows, illustrating them and discussing the main elements which emerged from the content of accepted items. Attention

centers on such points as: the nature and frequency of classes; relationships between classes among the several categories; connections between ages of members and prevalence of classes; accordance or discrepancy of findings with theoretical generalizations.

Based on the findings the following conclusions were reached:

1. Narrative process records can be used to arrive at the components of a professional method.
2. This project is one way of approaching this problem and the instrument developed here should be tested further.
3. The suggested classes are representative of the social group work method, although there may be additional ones which did not appear in this sample.
4. Specific findings are largely in accordance with assumptions and facts known from theory and practice:
 - (a) Enabling and Supporting, Observing and Evaluating and Planning and Preparing; appear leading among the activities of workers. Enabling individuals and groups to express themselves and supporting the feeling of accomplishment, seem characteristic for social group work.
 - (b) The use of worker's self in various roles emerged as the most frequently used tool. A discrepancy with prevailing notions was discovered in the low incidences for group-interactions and program as consciously used tools.
 - (c) The main mean of communication was verbal; gestural communication occurred more often in work with children than with adults.
 - (d) Primary targets of activities were individual members followed by the total group.

These findings are considered valuable as stepping stones for future studies designed to further the conceptualization of the method and for comparative purposes.

282 pages. \$3.53. MicA54-2159

SOCIOLOGY

SOCIOLOGY, GENERAL

TOWARD A SOCIOLOGY OF SOCIAL CONFLICT

(Publication No. 8639)

Lewis A. Coser, Ph. D.
Columbia University, 1954

This book is an effort to clarify the concept of social conflict, and in doing so to examine its use in empirical sociological research.

Part I traces the development of the concept of social conflict in American sociology and attempts to relate its uses to structural changes in American society. The interrelations are traced between, on the one hand, the social position, the socially-molded images which American sociologists have had of themselves, as well as their actual or potential audiences and, on the other hand, the nature and extent of their concern with social conflict.

Part I concludes that the concern with social conflict on the part of the earlier generation of American

sociologists and its neglect by more recent sociologists, as well as the recent neglect of its functions as distinct from its dysfunctions, can be accounted for largely by the changing roles and audiences of sociologists in recent decades. With the shift from a reform-minded public to a stability-minded audience of administrators and bureaucrats, with the shift of many sociologists from academic and scientific to extra-academic and technical roles, we note a decreasing concern with a general theory of social conflict and a tendency to replace analysis of conflict by the study of "tensions," "strains" and psychological malfunctioning.

Part II deals with a number of basic propositions which have been distilled from theories of social conflict, in particular from the theories of Georg Simmel. These propositions are in turn extended and related to other findings of a theoretical or empirical nature. Attention is focused on the functions, rather than the dysfunctions of social conflict, that is to say on those consequences of social conflict which make for an increase rather than a decrease in the adaptation of adjustment of social relationships or groups. Far from being only a "negative" factor which "tears apart," social conflict is found to fulfill a number of determinate functions; it may, for example, contribute to the maintenance of group boundaries, it may prevent withdrawal of members from a group, increase its internal cohesion and lead to a readjustment of power relations and normative structures.

The differential impact of different types of conflicts on various group structures is traced; this leads to the conclusion that conflicts tend to be dysfunctional for those social structures in which there is no or insufficient toleration and institutionalization of conflict. The intensity of conflicts which attack the consensual basis of a social system is found generally to be related to the rigidity of the structure in which they occur. In flexible social structures multiple conflicts criss-cross each other and thereby prevent major cleavages along one axis. In loosely structured groups and open societies conflict, which aims at a resolution of tension between antagonists, is likely to have stabilizing and integrative functions. In such systems toleration and institutionalization of conflict serves as a stabilizing mechanism. Rigid structures tend to suppress conflict but they thereby maximize the chances of explosive outbreaks.

444 pages. \$5.55. MicA54-2960

**ETHNIC MEMBERSHIP IN COMMUNITY
ORGANIZATIONS OF AN OHIO STEEL TOWN:
A STUDY OF THE RATE OF
SOCIAL ASSIMILATION**

(Publication No. 8673)

Catherine Esther Gregg, Ph. D.
Columbia University, 1954

The secondary or community participation phase of the process of social assimilation of external

immigrants into American communities was studied in a laboratory community which had experienced continuous waves of foreign immigration for many years. Sixty organizations or bodies were selected as representative of the ongoing community life and the extent of participation in them by members of various ethnic groups found.

The rates of social assimilation, using such participation as a criterion, proved the same for all ethnic groups regardless of country of origin, a function of the American culture rather than of the extent of difference between the original and the American culture.

The rate was influenced by group size, ethnic groups of two hundred families or over requiring approximately sixty years for ten percent of the families in the group to furnish participants on the lower organizational levels in proportion to the group's numerical strength in the community. Participation on the higher organizational levels by the members of any group in proportion to numerical strength, where it had occurred, required about a hundred years. With ethnic groups of less than one hundred families, the rate of participation appeared to increase as the group size decreased, regardless of country of origin.

Two basic patterns appeared in the process, the "dispersed" pattern in which the more enterprising members of any group reach out ahead of the main body of the group, and the "homogeneous" pattern in which the entire group tends to assimilate together as one body. Any feeling or situation in common helps to augment group homogeneity.

A previous knowledge of English and the presence in the community of previous immigrants from the same country who had assimilated well into the participation phase were both found to increase the rate at first. As the higher organizational levels were reached, the effect tended to diminish. A better than average education was found to either facilitate participation greatly or to act as a powerful block, depending on the volition of the person possessing it.

Differences were found at the points where the American culture was in transition or in conflict, in connection with social sex role and race. The sex differences were common to all ethnic groups, but generally speaking, race attitudes toward the American Negro were not carried over to other races but tended to be directed specifically toward the Negro. When they were carried over by a few specific individuals, they tended to be carried over completely and were not dependent on gradations of skin color.

Religious differences were found to have little effect on the actual assimilation process, but the major religious barriers were found to outlast the ethnic ones, the difference in the order of their respective disappearance carrying considerable potential social consequence.

With respect to the effect of the process on individuals in a family setting, the concept of conflict in immigrant families, among others, was found to be in need of some reexamination with regard to which are basically culture conflicts and which are basically generation conflicts of a more universal nature.

Participation habits and attitudes appeared to

begin at the secondary school level, and the single public high school where young people of all ethnic groups could meet on a basis of equality and establish participation habits emerged as the social agency most capable of promoting social assimilation at an optimum rate, both for the immigrant groups and the community. 339 pages. \$4.24. MicA54-2961

**THE SOCIAL ORIGINS AND CAREER LINES
OF THREE GENERATIONS OF AMERICAN
BUSINESS LEADERS**

(Publication No. 8696)

Suzanne Infeld Keller, Ph. D.
Columbia University, 1953

This study focused on the social origins and career experiences of three generations of men who held the leading positions in the leading business firms of the United States in 1870, 1900-1910 and 1950.

The 401 business leaders of the 1870 generation were distributed in three basic areas of the economy, namely in manufacturing and mining, in finance and in railroad transportation and in each of these areas they occupied the topmost positions in the topmost companies. The 190 business leaders for the decade 1900-1910 comprised the presidents and vice-presidents of corporations as well as the partners in private banking houses in four basic areas - those described above and the additional area of public utilities. In the 1950 generation were included the presidents and board chairmen of the two hundred largest corporations (422 men in all) in all of the above areas as well as in the additional ones of distribution and entertainment and mass communications. The total number of men dealt with was 1013.

After the sample had been selected, the data were gathered, classified and analyzed. The men's ethnic, regional and religious origins, their ancestry, their fathers' and their grandfathers' occupations and their own educational attainments and career histories were explored and discussed.

The questions which provided the framework for the analysis of the material were: 1) Has mobility into the American business elite increased or decreased over the eighty year period under review? 2) What have been some of the major consequences of the bureaucratization of business on the careers of the latest generation of business leaders?

In each period, it was found, the business leaders constituted a highly selected group differing in a number of respects from the population at large. They tended, on the whole, to be drawn from business and professional homes, to be largely of British and Colonial stock and to have Protestant religious affiliations. Only a small proportion rose to their present positions from humble origins, but this proportion was actually somewhat higher for the latest generation of business leaders than for the earlier generations, particularly for that of 1900. The implications

of this were discussed in terms of the transition from an economy of family enterprises to one of corporate enterprises and the resultant bureaucratization of the pursuit of business careers.

In addition, a college education seems to play a different role now than formerly in that it is no longer merely a desirable asset but is increasingly becoming a formal prerequisite for careers in large corporations. This is confirmed by the finding that nearly two-thirds of the 1950 generation of business leaders had been graduated from college.

Finally, the ascent to the top was shown to have changed markedly. Increasingly, all of an aspirant's working life tends to be spent within a single industry, often only within a single company. The length of time required to attain the topmost position in a corporation has vastly increased so that despite the trend toward starting to work in the company at younger ages (usually immediately after leaving college) the age at which success is attained has risen. The large majority of the 1950 generation, for example, achieved the high points in their careers when in their fifties and sixties, in contrast to the 1870 and 1900 generations where the modal pattern was to have reached this point before the age of forty-five. Furthermore, there seems to be a trend toward starting out in a lower white collar job within the company in which one is to rise, and as a consequence, career paths have become more routinized and more sharply defined. Nearly six out of ten 1950 business leaders had been vice presidents of their firms before assuming the presidencies. Regardless of family background or of educational attainments, the "bureaucratic pattern of success" has become the prevalent pattern in the largest corporations of present-day American society. 207 pages. \$2.59. MicA54-2162

**THE RUBBER TRADE AND THE
MUNDURUCÚ VILLAGE**

(Publication No. 8741)

Robert Francis Murphy, Ph. D.
Columbia University, 1954

By an analysis of the effect of the involvement of the Mundurucú Indians in the economy of the exploitation and sale of wild rubber, this thesis shows that the mode of economic contact between a primitive people and Western society is a key determinant of the course of acculturation.

The Mundurucú first appeared in historical sources as an extremely warlike tribe which raided the Portuguese colonial settlements on the south shore of the Amazon River in the late eighteenth century. In 1795, their villages east of the upper Tapajós River, in central Brazil, were located by colonial troops and attacked. The bellicosity of these headhunters was shortly afterwards turned to advantage by the Portuguese authorities, who employed them as mercenary warriors against unpacified Indians. This began a long history of peaceful relations between

the Mundurucú and the whites, which continues to the present day.

The developing extraction economy of the Amazon and the lower portions of its tributaries began to attract Mundurucú from their isolated habitat on the upper Tapajós River in the early nineteenth century. Many Indians moved downstream to the lower reaches of the Madeira and Tapajós Rivers, where their services were welcomed by the whites, due to the chronic shortage of labor in Amazonia. In time, these people became assimilated into the neo-Brazilian, or *caboclo*, population.

After the middle of the nineteenth century, the Western economy, now in search of wild rubber, penetrated Mundurucú country. The Indians, always eager to secure firearms, hardware, and other manufactured articles, entered into economic relations with the traders who settled on the Tapajós River, and who exerted proprietary rights over the rubber resources.

The cohesion of the Mundurucú villages was based on collective effort in warfare and the subsistence economy. The village, as a social unit, was structured by extended families with matrilineal residence, patrilineal clans and moieties, an hereditary chieftainship, and the men's house, which served as the center for the male religious and warrior organization. Despite involvement in the rubber economy, the villages persisted as integrated socio-economic units, due to the continuation of warfare and the new function of the chief as intermediary between the trader and the villages. Wild rubber collection is an extensive form of exploitation and workers must scatter out to the isolated paths which give access to the trees. In the early stages of Mundurucú rubber collection this dispersal had limited effects, for the Indians collected rubber only during three months of the year and returned to their villages for the remaining nine months.

Increased dependence on the returns from the individually held and exploited rubber avenues has acted to destroy the aboriginal socio-economic organization in recent years. A part of the Mundurucú population has maintained a modified form of the aboriginal type village and above pattern of rubber collection, but over one-half of the tribe has moved to the shores of a river of the region, the environs of which are rich in rubber. This section of the tribe has been attracted to this stream, the Cururú River, by the trade goods available at a local Mission and also by the longer rubber production season offered by proximity to the trees. On the Cururú River, trade is conducted by individuals and not through chiefs.

The Mundurucú of the Cururú River live in villages, but these lack the collective labor and the men's organization of the aboriginal type communities. The basic social and economic unit has changed from the village and extended family to the nuclear family. Almost all aspects of life have become more individualized and extended bonds of kinship are falling into disuse. This individualization, coupled with older centrifugal forces, such as sorcery and political factionalism, have caused a process of fission in

the Cururú River villages and they are now in a process of dissolution.

It is concluded that the fact of involvement in trade relations with the whites gives rise to individualization and individualism, and the exploitation of rubber, specifically, is conducive to an atomistic social organization. Both of these factors have tended to destroy Mundurucú life in nucleated communities and both are antithetical to the whole aboriginal socio-economic organization.

167 pages. \$2.09. MicA54-2163

THE CONSTRUCTION OF A RURAL-URBAN INDEX

(Publication No. 8924)

Orry C. Walz, Ph. D.
University of Kansas, 1954

The general theory out of which the problem for the present study grew holds that the advance of industrialization and the growth of cities is accompanied by a way of life which is relatively different in many respects from that of rural people. The assumption of a rural-urban continuum for both ecological and socio-cultural characteristics was adopted. The problem was to construct a composite index which would help to answer the question: Relatively how urban is the socio-cultural structure of a given population in the United States today?

The primary source of data was the 1950 Census tabulations. Units used were counties and standard metropolitan areas. Polar type constructs were set up describing 1) an extremely urban way of life, and 2) an extremely rural way of life, both in the United States today. Hypotheses were formulated concerning the comparative characteristics of populations with reference to these polar types. Census items were chosen as indices of those characteristics.

Using the constructed types as criteria, samples of extremely urban units and extremely rural units were selected. The eighteen most populous standard metropolitan areas and seventeen counties selected by rural sociologists were used. The purpose of this phase of the study was to eliminate those indices which did not discriminate consistently between the two extreme samples. Out of eighty-one indices examined, thirty-seven were discarded on the basis of inspection. The remaining forty-four were tested for their discriminating power by Kendall's tau coefficient of rank correlation, and nineteen were dropped.

The remaining twenty-five indices were applied to a random sample of forty units. Composite scores for all forty units were computed by combining the weighted standard scores of the twenty-five component items. The amount of association between each component variable and the set of composite scores was measured by simple linear correlation. The twelve indices having correlation coefficients of +.70 or greater were retained for the Rural-Urban Index.

Validation of the Index was approached in several ways. 1) The research design was such that indices

which discriminated efficiently between units operationally defined as "urban" and units operationally defined as "rural" would have a priori validity. 2) The internal consistency of the Index was fairly high. 3) Comparison with the Queen-Carpenter Index of Urbanism and with the rural-urban dichotomy of the Census Bureau revealed positive but rather low correlation coefficients. 4) Finally, the Index was applied to a new sample of ten standard metropolitan areas and eighteen extremely rural counties selected by rural sociologists. Index scores for this sample not only discriminated between the urban and rural units but were substantially larger for the urban than for the rural.

Conclusions: 1) Index scores seem to support the assumption of a rural-urban continuum, although there are indications of possible "natural breaks." 2) Population concentration alone appears to be an inadequate index of urbanism. 3) The feasibility of employing constructed types as reference points and using extreme samples to select indices of socio-cultural characteristics has been tentatively demonstrated. 4) Indications are that hypotheses formulated in this study about the relationship of urbanism to sex ratio, marriage rate, crude birth rate, infant mortality rate, age composition, mobility, and overcrowded housing may have to be revised.

129 pages. \$1.61. MicA54-2164

SOCIOLOGY, PUBLIC WELFARE

POST-PROBATION RECIDIVISM AMONG 500 FEDERAL OFFENDERS

(Publication No. 8544)

Ralph W. England, Jr., Ph. D.
University of Pennsylvania, 1954

Supervisor: Jerry P. Shalloo

This dissertation reports the results of an inquiry into the post-probation recidivism of 500 offenders, probationed in the Eastern District of Pennsylvania, whose probationary periods terminated satisfactorily between January 1, 1939 and December 31, 1944.

Using postprobation convictions as the criterion of success and failure, it was learned that 17.7% of the attenuated sample of 490 experienced further convictions, and hence were designated as failures. The offenses leading to the convictions were principally minor ones, over half of which involved liquor violations, gambling, theft, and disorderly conduct.

Using data contained largely in the probationers' pre-sentence investigation forms, the respective variables which appear to have been associated with success and failure were then determined; the picture which emerged is the expected one in which recidivists are more likely, and non-recidivists less likely, to have been characterized by factors common to

younger, lower-level, socially disadvantaged persons who have had previous encounters with the law. Based on these findings, a prognostic table, following Monachesi's procedure, was constructed.

The "probation experiences" of the 490 offenders were then examined, with emphasis upon the routine procedures and conditions to which they were subjected, and upon special services and aids carried out in their behalf. Two main conclusions were reached: (a) the amount of supervisory contacts occurring between the probationers and their officers were considerably below the standard set by probation experts, and were so distributed as to indicate that the officers had not concentrated their attention on those offenders most characterized by criminogenic factors; (b) special services and aids were given to about one-quarter of the probationers, and appear not to have been of types requiring extensive training in behavior sciences.

A theoretical explanation was offered for the low recidivism rate of 17.7%, in view of the fact that the probationers were apparently not subjected to anything approaching ideal standards of rehabilitative treatment.

181 pages. \$2.26. MicA54-2165

SOCIOLOGY, RACE QUESTION

SOCIOLOGY OF JUDGE-MADE LAW IN CIVIL RIGHTS CASES

(Publication No. 8880)

Ernst Borinski, Ph. D.
University of Pittsburgh, 1954

This study deals with principles of judge-made law controlling decisions of the Supreme Court of the United States in civil rights cases. Its objective is to discover from these principles the role played by the Court in the Negro-white caste order and to prove that as the net result of the operation of these principles the Court protects the Negro's constitutional rights without assuming the role of an active agent of social change.

Background information on early American race laws, federal civil rights legislation, and state laws supporting segregation is reviewed. An analysis of the Slaughter House, Civil Rights, and Plessy-Ferguson cases which provided historical precedents that guided judge-made law in segregation cases follows the preceding legal background. Civil rights cases in the area of education, transportation, and housing of the Negro are examined for their contribution to the further development of judge-made law. The test cases on segregation in public schools currently before the Supreme Court are discussed for their potential influences on judge-made law.

This study reveals:

1. The Court could interpret federal civil rights law as protecting the Negro's constitutional rights

only or as allowing the federal government also to make racial policies. The Court limits federal power to the protection of civil rights.

2. The Court considers segregation as a factual relationship and not as the legal issue of cases discussed in this study, and thus was not required to decide on its legality.

3. The Court sets forth this policy through the "Separate But Equal" doctrine in the Plessy-Ferguson case which assigned protection of civil rights to federal police power and racial policies to the police power of the State.

4. As a result of Court action, equality as a group attribute is replaced by equality before the law as a personal and present right of the individual Negro.

5. The Court makes varying interpretations of factual relationships in segregation cases and of certain clauses in civil rights laws in order to allow for the progressive realization of the Negro's civil rights. The Court remains flexible in the decisions of these cases by leaving certain terms ("immunities and privileges," "state action," "equality," and "reasonableness") open to redefinition.

6. Through this flexibility the Court renders decisions which meet the community's capacity to adjust to changes in the established pattern of Negro-white relations; yet it maintains the constitutional

principle of reserving original political power to the State and investing the federal government only with delegated, although supreme, power.

7. The Court accepts changed interpretations of factual relationships as to the consequences of segregation resulting from social changes in the community, such as shifts of the political and social power balance and the influence of social movements.

8. The test cases on segregation in public education indicate that segregation in this area may be considered by the Court as always interfering with equality, thus becoming a situation of law. Such segregation laws would then violate the Fourteenth Amendment, and a philosophy of community-centered education would imply elimination of segregation laws in all other areas.

9. A trend toward a national policy of de-segregation has been observed which may call for uniform rules of social conduct between Negroes and whites in modern American society.

Sociology and judicial processes meet not as a result of the Court's assumption of sociological functions, but rather through the responsiveness of the Court to social forces when reinterpreting factual relationships in civil rights cases. In this continuous reinterpretation rests the sociology of judge-made law.

329 pages. \$4.11. MicA54-2166

ZOOLOGY

THE ECOLOGY OF THE LIMNETIC CLADOCERA OF PYMATUNING RESERVOIR

(Publication No. 8879)

Gloria Wess Borecky, Ph. D.
University of Pittsburgh, 1954

It is the twofold purpose of this paper to determine the effect of certain environmental factors on a population of Cladocera and to determine the usefulness of certain statistical methods as means of studying life in its natural environment. Statistical partitioning of experimental variability is advocated rather than laboratory control; the application of an analysis of variance and of multiple regression and covariance is discussed in this connection.

This study was conducted on the Pymatuning Reservoir, an eutrophic lake constructed in 1934 as a flood control measure; located about 40 miles south of Lake Erie on the Pennsylvania-Ohio border, this reservoir can be divided into three ecologically distinct lakes: Sanctuary, Middle, and Lower.

Plankton and chemical samples were taken over a period of three years - weekly samples during the summer, monthly or biweekly samples during fall and winter. The number of Cladocera per liter was counted and the following limnetic species were found:

Bosmina longirostris, *Chydorus sphaericus*, *Daphnia longispina*, and *Diaphanosoma brachyurum*. Analyses by standard methods were made in the field for: pH, and parts per million of oxygen, free carbon dioxide, bicarbonate and carbonate ions.

In an analysis of variance the numbers of Cladocera and the concentrations of carbonates and bicarbonates differed significantly between lakes; the lakes differ qualitatively in their amounts of particulate organic matter and in the organic content of the bottom soils. Sanctuary Lake has the highest amounts of all these factors and is also the shallowest of the three lakes. The mean number of Cladocera per liter for the three lakes is: Sanctuary, 872; Middle, 205; Lower, 92.

Numbers of animals are correlated with oxygen, carbonates, and bicarbonates. pH values in the lakes are highly variable. The sums of squares associated with different levels of pH were subtracted from the total sums of squares for numbers, carbonates, and bicarbonates; the resultant sums of squares associated with lakes and error were used in a regression of numbers of animals on carbonates and bicarbonates. The errors of estimate for lakes in comparison with the errors of estimate for experimental error were, as a result of this regression, not significant.

Carbonates, bicarbonates, and pH are regarded

as indexes of the photosynthetic activity which is, in turn, a measure of the amount of food available for Cladocera. In regression the lakes were statistically reduced to a common level for these three chemical factors. Under these conditions the numbers of Cladocera are not significantly different between lakes.

It is concluded that, in the environment provided by Pymatuning, densities of Cladocera are primarily determined by food supply and show a significant correlation with the chemical and physical factors that are directly related to food supply; the usefulness of an analysis of variance and multiple regression and covariance as a means of partitioning organismal and environmental variability, and of determining from a complex of uncontrolled factors which factors exert a significant influence on organisms, is shown.

80 pages. \$1.00. MicA54-2167

A STUDY OF SOME OF THE FACTORS
THAT CONTROL THE MAINTENANCE
AND CONCENTRATION OF KAPPA PER
CELL IN STOCK 51, VARIETY 4 KILLERS
OF PARAMECIUM AURELIA

(Publication No. 8783)

Pao Kuo Chao, Ph. D.
Indiana University, 1954

In both mating types (VII and VIII) and in both heterozygotes (Kk) and homozygotes (KK) for the killer gene, the number of kappa particles per cell increases during the first two cell divisions after fertilization to higher level than before fertilization. In the course of the following few fissions, it drops again to the level characteristic of the genotype and mating type, remaining at that level until the next fertilization. Genotype for genotype, type VII killers have twice as many kappa particles as type VIII killers and, for animals of the same mating type, KK cells have twice as many kappa particles as Kk cells. Kappa number and cell volume during this stage in the life cycle are halved at each fission and both are doubled before next fission; but kappa reaches its maximum considerably earlier than cell volume does in the interfission cycle. The kappa-mating-type relation is characteristic of the mating types in wild-type cultures of stock 51 of variety 4. Change in mating type in these animals is followed by change in kappa concentration. Comparative studies of several other killer stocks of variety 4 show that the mating type difference in kappa number is due to interactions among several factors: the genotype of the animals, the physical basis of mating type determination, the nature of the cytoplasmic particles, and the cultural conditions. The study of kappa in type VIII haploids (K) showed that kappa number varies from about 200 to more than 800 kappa particles per cell. The variations in kappa number in haploid type VIII clones are apparently clonal characteristics due to causes other than genotype and mating type. Change in genotype from Kk to either KK or kk results, during the first seven fissions, in no change in the

amount of kappa characteristic of this stage of the Kk life cycle. In the new KK cells, the kappa regularly rises to the KK level between the ninth and the tenth fission. In kk cells, the kappa suddenly drops to a low level or to zero after the eighth fission in some cells, and drops progressively in more and more cells until, by the fifteenth fission, it had disappeared from all of them. Loss of kappa from kk cells at high temperature can be delayed by addition of materials from kappa-free cells of constitution KK. The kk genotype appears to be unable to maintain kappa at 27° C. When kk-plus-kappa cells were kept at 10° C for a few days after their origin, the disappearance of kappa was delayed; but it was less delayed if they were maintained at 10° C. When these animals were alternately and repeatedly exposed to 10° C and 27° C, kappa was long maintained, still being present after 48 fissions. The necessity of both low and high temperatures for the maintenance of kappa in kk animals suggests that two different activities related to kappa growth are blocked at the two temperatures.

105 pages. \$1.31. MicA54-2168

A COMPARATIVE STUDY OF DOSE-ACTION
CURVES FOR VISIBLE EYE-COLOR
MUTATIONS INDUCED BY X-RAYS, THERMAL
NEUTRONS, AND FAST NEUTRONS IN
MORMONIELLA VIRTRIPENNIS

(Publication No. 8557)

Marion Kayhart, Ph. D.
University of Pennsylvania, 1954

Supervisor: Dr. P. W. Whiting

Virgin female wasps, *Mormoniella virtripennis*, (67,464) were treated with a series of doses of x-rays, thermal neutrons, and fast neutrons. They were set unmated and their haploid sons (318,129) were examined for bright eye-color mutants. Dose-action curves for production of visible eye-color mutations by each of the three radiations were obtained. The shape of the curves is similar; each shows an initial linear portion and then a rise more rapid than that calculated for proportionality. It is suggested that the mutations occurring at the lower doses, forming the linear part of the curve, are due to single hits, and that the proportion of two-hit mutations (small deletions and inversions) increases rapidly at the higher doses causing the curve to rise steeply. The neutron data adequately fit this one-hit two-hit hypothesis; the x-ray data do not.

Using visible eye-color mutations in *Mormoniella* as a criterion, 1 roentgen was found to be approximately equivalent to between 6×10^9 and 8×10^9 thermal neutrons per centimeter squared.

At lower doses, the RBE (relative biological efficiency) for fast neutrons as compared with x-rays was between 10 and 17; at higher doses between 3 and 4. This decreased efficiency at higher doses is to be expected if many of the visible eye-color mutations in *Mormoniella* are due to minute deletions and rearrangements.

The types of bright-eye mutants obtained in order of decreasing frequency were scarlet, oyster, red, and peach. Genetic tests of the mutants revealed that the mutation rate at the R locus is about 2-1/2 times that at all other eye-color loci combined.

87 pages. \$1.09. MicA54-2169

ANTIGENIC STABILITY AND VARIABILITY IN *PARAMECIUM AURELIA*, VARIETY 3

(Publication No. 8567)

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University of Pennsylvania, 1954

Supervisor: Dr. John R. Preer, Jr.

The serotypes of variety 3, group A, of *P. aurelia* have been analyzed:

1. Eight serotypes were described and the titer of their characteristic reactions with diagnostic and non-homologous antisera were given.
2. Twenty-nine stocks were surveyed for their ability to manifest the eight serotypes. Serotype G appeared in almost all stocks; serotype 60 in only one stock. Some stocks showed only one serotype; some stocks demonstrated six of the eight serotypes.
3. The variations in titers of homologous G serotypes in different stocks to different antisera was demonstrated. It was shown that genetically homologous D serotypes of variety 1 which fail to cross react also fail to cross-absorb, demonstrating the extent of variation in homologous types in that variety.
4. Five different transformation patterns of serotype G within 15 stocks were elicited under different environmental conditions.
5. The relative temperature stability optima for seven of the serotypes was determined and found to be:
60 : 58 : 61 and/or 53 : G : 51 : 50
with the serotypes of highest temperature optima at the left.
6. The serotypes of two stocks, 136 and 99, were investigated. Stock 136 showed only one stable serotype, G, and many unstable types which inevitably transformed to G. Stock 99 showed many stable serotypes, and optimal conditions for most of them were found.
7. The homologies between the variety 3 serotypes and those of varieties 1 and 2 were studied. Homologs for variety 1, serotypes D, G and S have been, at least tentatively, identified in variety 3. Serotype A of variety 2 also has an homologous type in variety 3.
8. The evolutionary significance of the results obtained were discussed. Alternative explanations of serotype determination were presented.

53 pages. \$1.00. MicA54-2170

RESPIRATION OF *SPISULA* EGGS

(Publication No. 8580)

Evelyn Schlufer, Ph. D.
University of Pennsylvania, 1954

Supervisor: H. G. Borei

The eggs of the surf clam, *Spisula solidissima* (Dillwyn), are shed in the germinal vesicle stage. Fertilization initiates meiosis and the subsequent cleavage and developmental stages. The *Spisula* egg shows unequal cleavage and attains the swimming blastula stage at 330 minutes after fertilization when development occurs at 21° C. Up to this time, it has gone through six cleavages.

Oxygen consumption and total gas exchange of unfertilized and fertilized eggs were measured with the Cartesiam diver microspirometer. The rate of oxygen consumption per egg of both fertilized and unfertilized eggs decreases as the number of eggs in the suspension increases. The carbon dioxide output, as determined from the measurements of total gas exchange, also decreases as the suspension density increases. For this reason, crowding curves were obtained and all rates were calculated to correspond to a density of 170 eggs in 0.8 µl of suspension.

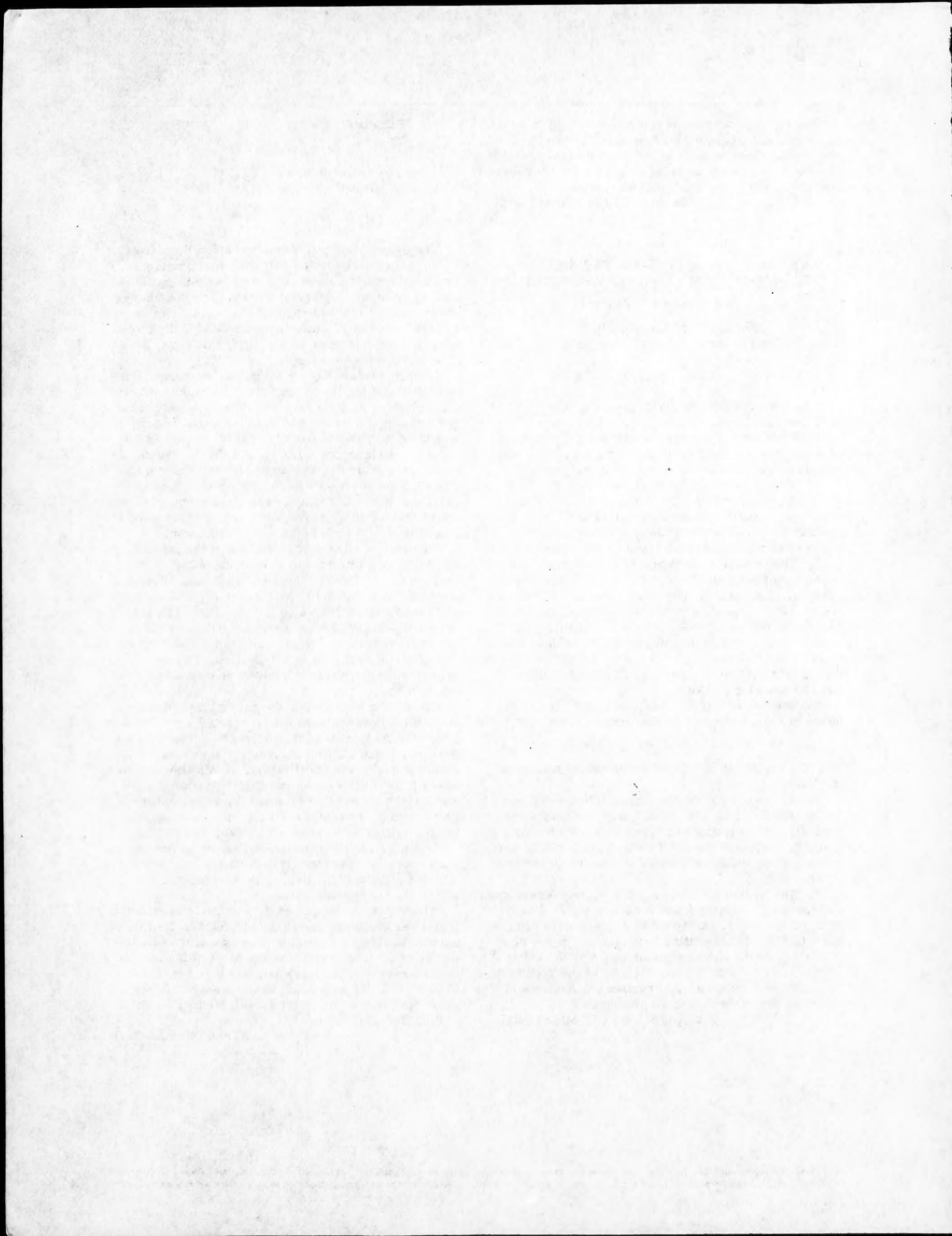
The rate of oxygen consumption of the unfertilized egg decreases after it has been removed from the ovary into sea water. The mean rate immediately after removal is 3.8×10^{-5} µl O₂ per egg and hour; eight hours later, the value is 3.0×10^{-5} . The rate of carbon dioxide evolution increases with time after removal, and, therefore, a tendency for the respiratory quotient to increase is indicated. The mean value for the respiratory quotient of the unfertilized egg is 0.65.

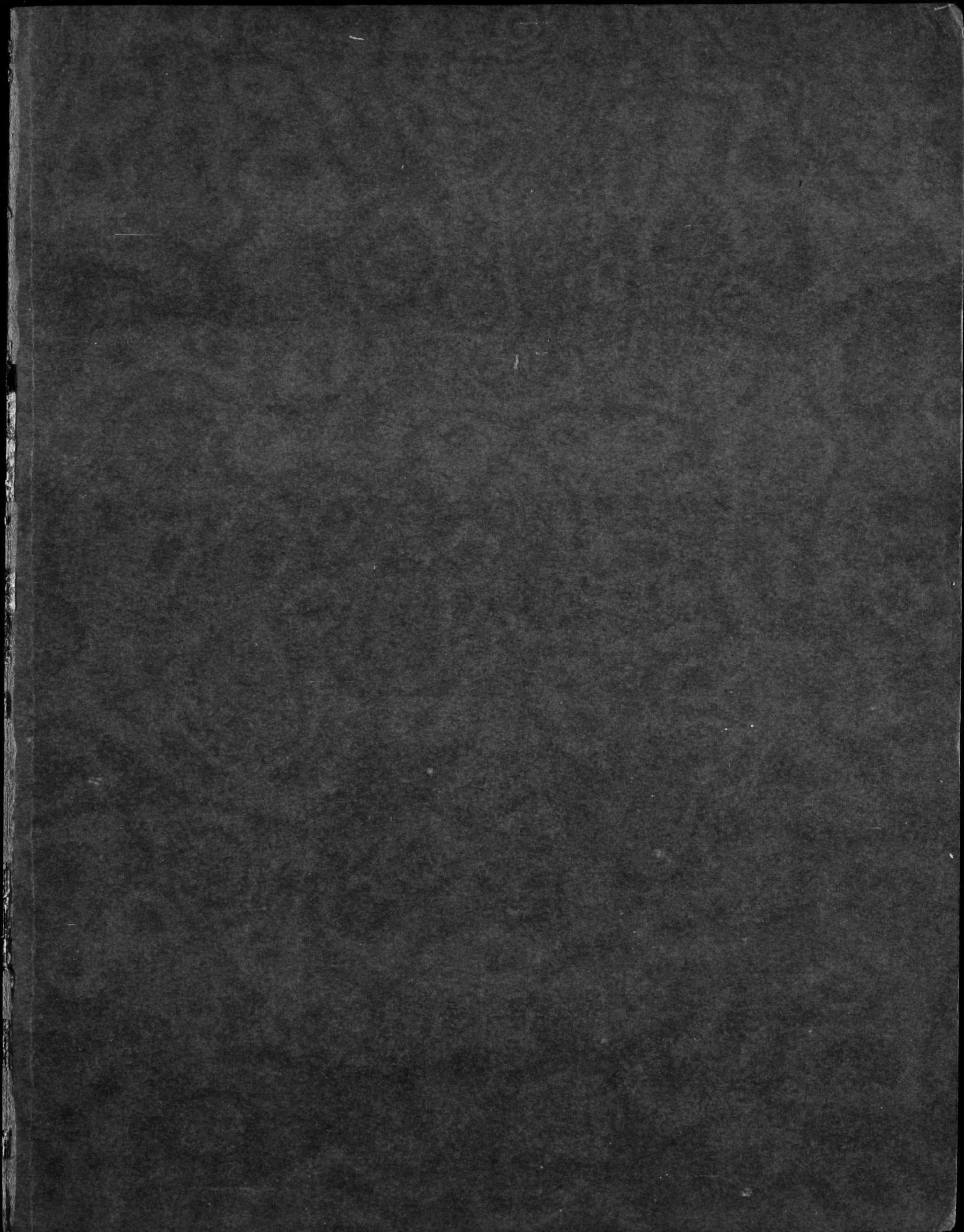
There is a decrease in the rate of oxygen consumption within the first thirty minutes after fertilization. The magnitude of this decrease depends on the time which has elapsed between the eggs' removal from the ovary and fertilization. If this time is short, the drop is considerable, but if fertilization occurs about eight hours after removal, there is no drop in rate. It is postulated that an increase may be possible if fertilization occurs even later.

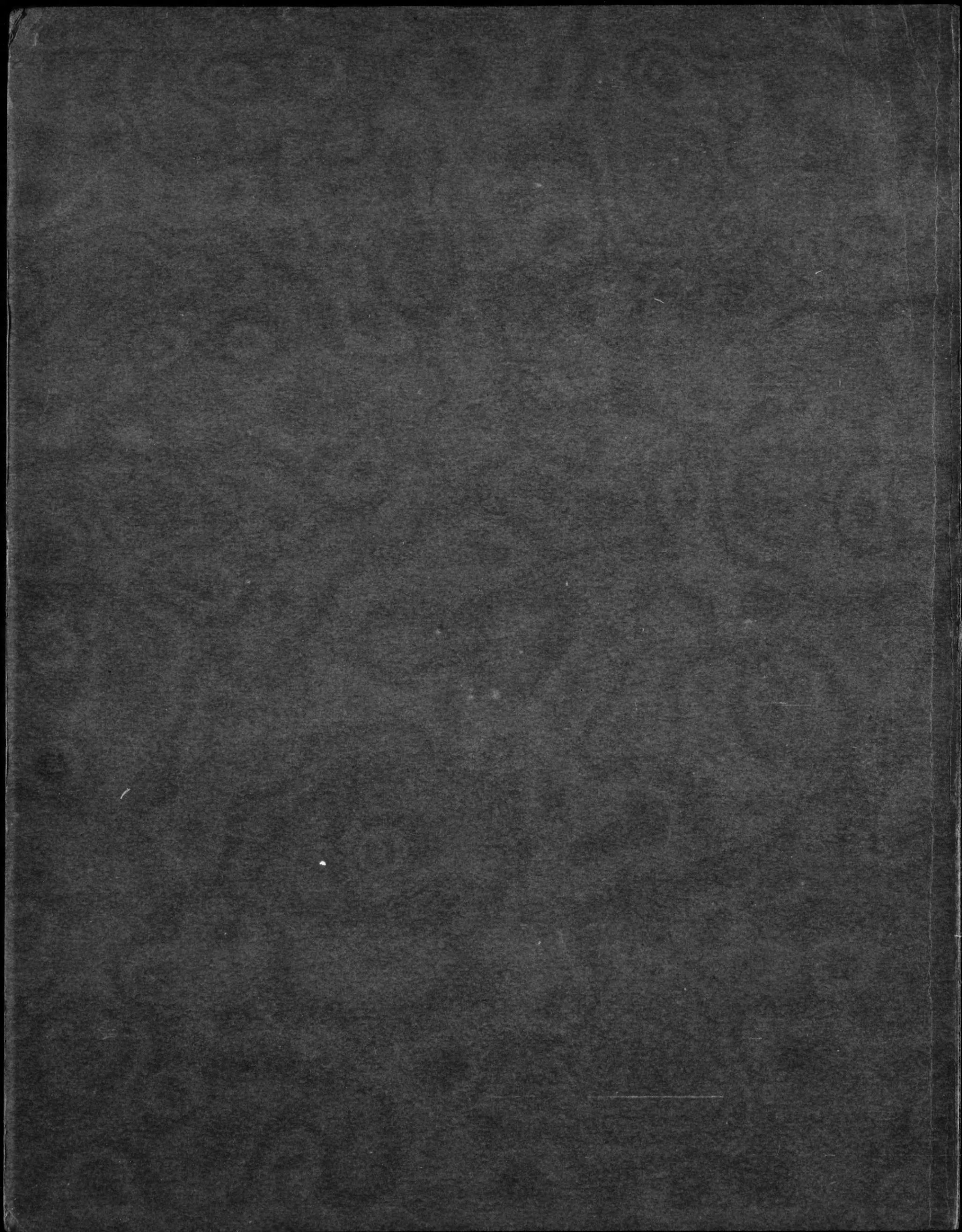
The post-fertilization oxygen consumption rate is independent of the rate before fertilization; thirty minutes after fertilization, it has a value of 3.0×10^{-5} µl O₂ per egg and hour.

The oxygen consumption rate of the fertilized egg increases gradually during development. The rate of carbon dioxide evolution increases also, but in a linear fashion. The respiratory quotient of the fertilized egg, therefore, rises gradually and then begins to flatten out at the swimming blastula stage. It has a value of 0.65 one hour after fertilization and a value of 0.95 five hours later.

72 pages. \$1.00. MicA54-2171







DISSERTATION ABSTRACTS

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